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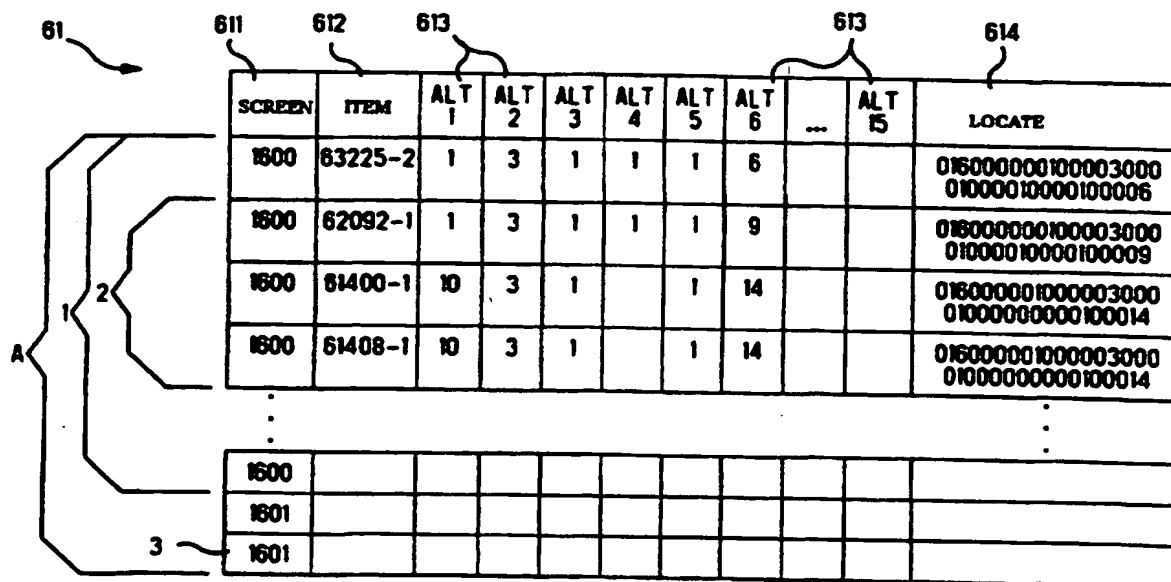
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(54) Title: METHOD AND SYSTEM FOR EXECUTING A GUIDED PARAMETRIC SEARCH



## (57) Abstract

A process for indentifying a single item from a family in which a user is presented with a feature screen having a series of groupings (611). Each grouping represents a feature having a set of alternatives (613) from which to select. Selected alternatives are used as selection criteria in a search operation. Results of the search operation are used in a revised feature screen indicating alternatives that remain available to the user. The feature screen and search process, therefore, present the user with a guided nonhierarchical parametric search to identify matching items based on user specified criteria and priorities.

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METHOD AND SYSTEM FOR EXECUTING A GUIDED  
PARAMETRIC SEARCH

BACKGROUND

Increased memory and remote electronic data storage capacity offers access to large amounts of data in a very convenient form and physical size. Data may be available on diskette, CD-ROM, magnetic tape, and on line to a centrally located computer and memory storage medium. The challenge remains to extract information from the data simply and efficiently and to have confidence in the result that all relevant items have been uncovered. The widespread use of computers and electronic searching has attracted the attention of large manufacturers offering a vast array of products in an increasingly competitive environment. In an effort to offer product that closely matches customer needs, manufacturers proliferate product and product feature alternatives. This proliferation of product offerings provides the customer with more options from which to choose, however, it also increases the difficulty of finding the one product offering that best addresses a specific customer's needs. Manufacturer's response has been to offer a series of specialized glossy catalogs and trained sales personnel to aid customers in their product selection effort. To a manufacturer, these catalogs are costly to create, distribute, and update. To a consumer, these catalogs are cumbersome to use and store. In order to further breakdown obstacles between a customer's need to obtain a product and purchase of the right product, a manufacturer may offer what is typically a large catalog or series of catalogs of product offerings, electronically. An electronic catalog offers the convenience of compact physical size coupled with automated search and retrieval.

One known search method of automated search and retrieval employs Boolean logic and keyword searching. The Boolean logic keyword search is appropriate for locating concepts discussed in textbased references. The Boolean search is based on certain words or word relationships

1 contained in a relevant collection of materials. Formulating  
2 an accurate and efficient Boolean search requires a certain  
3 level of knowledge about the structure of the data, the type  
4 of material being searched, the classification of the data if  
5 there is one, and any keywords or standard terminology likely  
6 to be used to express the concepts being searched. The  
7 Boolean logic keyword search is beneficial because it permits  
8 a user to formulate a search that accurately reflects certain  
9 priorities for the search. The Boolean logic keyword search,  
10 however, is inappropriate for locating a particular mix of  
11 feature alternatives within a database of product  
12 information. One searching for certain information may not  
13 be familiar with the terminology used in selecting a  
14 particular product. Multiple products may use different but  
15 synonymous terms. A concept expressed by a standard industry  
16 term in one industry may be different from a standard  
17 industry term in a different industry. A keyword search  
18 would require searching on all synonyms used in order to  
19 ensure a complete and accurate result.

20 Other interactive user interfaces use a hierarchial  
21 search. Hierarchial searches may also be referred to as tree  
22 searches and are a form of guided search. A variation of the  
23 hierarchical search is disclosed in U.S. patent 4,821,211 to  
24 Torres. A hierarchial search method offers a list of  
25 alternatives from which to select. The first list of  
26 alternatives has the highest priority and defines the profile  
27 of or relates to the remaining alternatives. Once selected,  
28 the system branches to another screen or lower level screen  
29 with another list of alternatives. The next list of  
30 alternatives having a lower priority. The system branches  
31 down through the various menus of alternatives having  
32 decreasing priority levels. There are known various methods  
33 of presenting graphical representations of a hierarchy to a  
34 user to help a user understand the current position within  
35 the hierarchy and the options for further movement within the  
36 hierarchy. A hierarchial search is appropriate for narrowing  
37 down to a subset of items from which to select based on  
38 alternatives having a fixed or necessarily depending priority

1 level. Using this method, the available alternatives shown  
2 on any screen depend upon prior alternative selections. The  
3 hierarchial search is beneficial in that it is guided. A  
4 guided search meaning that use of the search does not require  
5 knowledge of the terminology used within the database due to  
6 the fact that terms for the available concepts are offered to  
7 a user. A user then makes a selection before proceeding to  
8 the next level. The hierarchial search, however, is  
9 cumbersome unless the selection of one alternative obviates  
10 the availability of other alternatives. Unless a user knows  
11 exactly what he or she wants and with what priority, each  
12 "branch" in the tree must be explored in order to gather an  
13 understanding of how certain selections affect remaining  
14 alternatives. In the case of a list of product offerings,  
15 given a set of alternative features for a single product, a  
16 number of people will have differing priorities for those  
17 alternatives and the priorities will have varying weights.  
18 Another disadvantage of the hierarchial search is that the  
19 greater the number of alternatives and permutations of  
20 alternative selections, the more levels there are from which  
21 to select additional alternatives. Multiple levels of  
22 screens increase the time and complexity of the search and  
23 are not as user-friendly or as intuitive to use as a simpler  
24 single screen user interface. The need for a nonhierarchial  
25 guided parametric search is based on the principle that given  
26 a family of items having certain features associated  
27 therewith each feature having respective alternatives, the  
28 number of products actually offered by a manufacturer is less  
29 than the number of possible permutations of alternatives.  
30 For the purposes of a simple illustration, a family of items  
31 may be cars in which features include color, number of doors,  
32 transmission style, braking style, etc. If a feature of a  
33 car is color, respective alternatives may be red, white, and  
34 blue. If a feature is transmission styles, respective  
35 alternatives may be automatic, three speed, four speed, and  
36 five speed. The vast number of permutations coupled with the  
37 fact that only a subset of the permutations are actually  
38 offered for sale as products is a source of frustration to a

1 customer with a given set of needs. For instance red cars  
2 may come only with manual transmission and not automatic  
3 transmission. As features and alternatives proliferate, so  
4 does the level of frustration in isolating the one desired  
5 item. Accordingly, there is a need for a method to aid a  
6 user in identifying an item among a family of items based on  
7 selections of alternatives among features associated with the  
8 items.

9 Different customers have different preferences, and in  
10 many cases a customer is somewhat flexible concerning the  
11 product to buy as long as the customer is informed as to how  
12 the selection of one alternative affects the availability of  
13 another alternative. In addition, one customer may want a  
14 red car and accept manual transmission, while another  
15 customer must have automatic transmission and color is  
16 unimportant. Accordingly, there is a need for a search  
17 method that provides information interactively as to how  
18 certain alternative selections affect the number of remaining  
19 alternatives and/or matching items and allows a user to  
20 modify selection priorities during the course of the search.

21 There remains a need, therefore, for an automated search  
22 and retrieval system that can assist a user in finding a  
23 product having appropriate features to address identified  
24 needs and priorities of needs.

25 Associated with some known electronic search and  
26 retrieval systems is a certain amount of frustration when the  
27 defined search does not identify a single item. The user is  
28 obliged to further widen the field of search or modify a  
29 search criteria in order to identify any parts. The need to  
30 oblige the user to widen the field of search is due to the  
31 fact that hierarchial and keyword Boolean searches do not  
32 have any information in the search criteria to permit  
33 automatic adjustment of the field of search. There is a need  
34 therefore, for a electronic search method that is able to  
35 guarantee a user that at least one item will be identified.

36

37 SUMMARY OF THE INVENTION

1 It is therefore an object of the invention to provide a  
2 guided parametric search to isolate a subfamily of items  
3 within a family of items based on alternatives associated  
4 with each item.

5 It is a further object of the invention to organize the  
6 alternatives into groupings visually relating a feature and  
7 respective alternatives.

8 It is a further object of the invention to provide an  
9 automated search that interactively indicates how selected  
10 alternatives affects availability of remaining alternatives.

11 It is a further object of the present invention to  
12 provide an automated search method that can guarantee  
13 identification of at least one item for each search.

14 It is a feature of the present invention that a user is  
15 assisted in identifying a subfamily of items within a family  
16 of items by: providing a computer readable data file of  
17 stored information representing at least one family of items,  
18 the data file identifying at least one alternative for each  
19 item, reading the data file, displaying a feature screen  
20 indicating said alternatives represented in the family,  
21 accepting selected alternatives, determining the subfamily of  
22 items where each item in the subfamily satisfies the selected  
23 alternatives, determining available alternatives represented  
24 in the subfamily and unavailable alternatives unrepresented  
25 in the subfamily, and revising the feature screen indicating  
26 the available alternatives as distinct from the unavailable  
27 alternatives.

28 It is an advantage of the invention that revision of the  
29 feature screen provides an indication to the user as to how  
30 selected alternatives, or selection criteria, affect the  
31 profile of the subfamily satisfying the selection criteria.  
32 The revision answers the question; How does the selection of  
33 one alternative affect my remaining alternatives?

34 It is a feature of the invention that the process may be  
35 implemented in a server and client configuration for use on  
36 the Internet.

37 It is an advantage of the invention that an Internet  
38 configuration may be used as an electronic catalog, providing

1 an electronic alternative to updating and distributing  
2 product and/or service information.

3 Other advantages and results of the invention are  
4 apparent from the following detailed description by way of  
5 example, from accompanying drawings, and from the spirit and  
6 scope of the appended claims.

7

8 BRIEF DESCRIPTION OF THE DRAWINGS

9 Figure 1 is a view of a Main Menu screen.

10 Figure 2 is a view of an Alphabetical Search screen.

11 Figure 3 is a view of a second level Picture Search  
12 screen.

13 Figure 4 is a view of a View catalog screen.

14 Figure 5 is a view of a Catalog page screen.

15 Figure 6 is a view of a View part number information  
16 screen.

17 Figure 7 is a view of a feature screen prior to  
18 selections of alternatives having been made by a user.

19 Figure 8 is a view of a feature screen subsequent to a  
20 single selection of an alternative and completion of a search  
21 initiated by a user after revision based upon the results of  
22 the search.

23 Figure 9 is a view of a revised feature screen  
24 subsequent to a second selection of an alternative from the  
25 revised feature screen shown in Figure 8 and completion of a  
26 search initiated by a user after revision based upon the  
27 results of the search which has identified a single item.

28 Figure 10 is a view of a Property screen for the item  
29 identified in the feature screen in Figure 9.

30 Figure 11 is a graphical representation of the Database  
31 Organization Datafile and example data records therein.

32 Figure 12 is a graphical representation of the Part  
33 Number Features Datafile and example data records therein.

34 Figure 13 is a graphical representation of the feature  
35 screen Group Datafile and example data records therein.

36 Figure 14 is a graphical representation of the feature  
37 screen Description Datafile and example data records therein.



1       Figure 15 is a graphical representation of the Feature  
2 Name Datafile and example data records therein.

3       Figure 16 is a graphical representation of the Feature  
4 Value Datafile and example data records therein.

5       Figure 17 is a graphical representation of the feature  
6 screen Image Datafile and example data records therein.

7       Figure 18 is a graphical representation of the Part  
8 Number Properties Datafile and example data records therein.

9       Figure 19 is a graphical representation of the Extra  
10 Properties Datafile and example data records therein.

11       Figure 20 is a graphical representation of the Screen  
12 Title Datafile and example data records therein.

13       Figure 21 is a graphical representation of the program  
14 flow of an embodiment of the feature screen creation  
15 operation labeling the groupings for a unique feature screen.

16       Figure 22 is a graphical representation of the program  
17 flow of an embodiment of the feature screen creation  
18 operation labeling the alternatives.

19       Figure 23 is a graphical representation of the program  
20 flow of an embodiment of the Search operation initiated from  
21 the feature screen.

22       Figure 24 is a graphical representation of the program  
23 flow of an embodiment of the feature screen revision  
24 operation.

25       Figure 25 is a representation of a server and client  
26 configuration and the flow of data therebetween.

27       Figure 26 is a feature screen used in a preferred  
28 embodiment of the invention in an Internet environment.

29       Figure 27 is a feature screen revised from the feature  
30 screen of Figure 26 and having "Non-Insulation Support" and  
31 "None" for the "Specials" feature as selected alternatives  
32 and is updated with available alternatives underlined and  
33 unavailable alternatives not underlined.

34       Figure 28 is a further revision of the feature screen of  
35 Figure 27 narrowing down the subfamily to thirteen items.

36       Figure 29 is a further revision of the feature screen of  
37 Figure 28 narrowing down the subfamily to one item.

1 Figure 30 is a property screen used in a preferred  
2 embodiment of the invention in the Internet environment.

3 Figure 31 is a main menu used in a preferred embodiment  
4 of the invention in the Internet environment.

5 Figure 32 is an alphabetical search menu used in a  
6 preferred embodiment of the invention in the Internet  
7 environment.

8 Figure 33 and 34 is a first and second level picture  
9 search menu respectively used in a preferred embodiment of  
10 the invention in the Internet environment.

11 Figure 35 is a view part number menu used in a preferred  
12 embodiment of the invention in the Internet environment.

13

#### 14 DETAILED DESCRIPTION

15 A nonhierarchial guided parametric search is executed on  
16 a computer and permits a user to select a family of items 1  
17 from among a plurality of families of electrical connectors,  
18 via a Main Menu 40. A family of items 1 could be any  
19 commercial product or service offering with a common set of  
20 features 5 and alternatives 6, associated therewith.  
21 Preferably, the alternatives 6 are item qualifiers and  
22 related to customer purchase options and criteria. In a  
23 preferred embodiment, an example of a family of items 1 is  
24 FASTON Receptacles - Uninsulated. FASTON is a trademark of  
25 AMP Incorporated. Alternative embodiments may include a  
26 family 1 of service providers having features 5 and  
27 alternatives 6 relating to provider qualifications. It is  
28 apparent, therefore, that "family" as used herein is broadly  
29 defined as a collection of offerings with specific qualifiers  
30 and/or attributes, where one would want to identify an  
31 offering by specifying its qualifiers and/or attributes. The  
32 preferred embodiment, however, is adapted to a family of  
33 physical items, specifically electrical connectors.

#### 34 USER MENUS

##### 35 MAIN MENU

36 An example of the Main Menu 40 is shown in Figure 1.  
37 The Main Menu 40 offers an interactive pick for an  
38 Alphabetical Search 41, a Picture Search 42, a View Catalog

1 43, or a Get Part Number Information 44 as methods for  
2 identifying a single family of items 1. The About pick 49  
3 provides administrative information about the vendor such as  
4 telephone number, address, and facsimile phone number. The  
5 Exit pick 50 exits to the computer operating system.

#### 6 ALPHABETICAL SEARCH

7 An example of an Alphabetical Search menu is shown in  
8 Figure 2. The Alphabetical Search pick 41 provides to the  
9 user a list box 15 comprising alphabetical listbox entries 16  
10 of industry standard terms and proprietary terms for product  
11 families 1 that are available on a data file to be searched.  
12 Each listbox entry 16 in the Alphabetical Search menu  
13 represents either a subfamily 2, a family of items 1 or a  
14 cluster of families 4. The user selects an alphabetical  
15 entry 16 and OK pick 51. If the selected listbox entry 16  
16 represents a cluster of families 4, the system branches to a  
17 picture search 42 described herein below. The user further  
18 delineates the family of items 1 that is of interest by  
19 further selection within the cluster 4 using a hierarchical  
20 selection method. If the alphabetical entry 16 requires no  
21 further delineation, the system branches to a feature screen  
22 9. The cancel pick 52 returns the user to the Main menu 40.

#### 23 PICTURE SEARCH

24 The user enters a Picture Search Menu via either the  
25 picture search pick 42 from the Main Menu 40 or by selecting  
26 an alphabetical entry 16 from the Alphabetical Search Menu 41  
27 that requires further delineation before identifying a single  
28 family of items 1. A picture search provides to the user a  
29 display of a series of pictures 17, each picture 17  
30 representing either a family cluster 4 or a family of items 1  
31 that are available to be searched. A series of picture 17  
32 appears on one or more display pages. A page marker 58  
33 indicates the current page and the total number of pages in  
34 the display. Prior screen pushbutton 201 returns the user to  
35 the prior screen. Home pushbutton 202 returns the user to  
36 the Main Menu 40. Help pushbutton 203 provides help text for  
37 the picture screen. The user, via a mouse or other pointing  
38 device, moves an interactive pointer 39 from picture to

1 picture 17. As the pointer 39 passes over each picture 17, a  
2 picture subtitle 48a, indicating the name of the family 1 or  
3 cluster of families 4 represented by the picture 17, changes  
4 accordingly. The user selects a family 1 or cluster of  
5 families 4, by clicking the mouse as the pointer 39 is  
6 positioned over the desired representative picture 17. If  
7 the selected picture represents a family cluster 4, the  
8 system branches to a lower level picture search. An example  
9 of a second level picture search menu is shown in Figure 3.  
10 In the lower level picture search, the system provides to the  
11 user a display of a series of pictures that further  
12 delineates the families 1 available within the selected  
13 family cluster 4. The user again selects one of the pictures  
14 presented and continues in this hierarchial fashion until  
15 isolating a selection that represents a single family of  
16 items 1. If the selected picture represents a single family  
17 1, the system branches directly to the feature screen 9.

#### 18 VIEW CATALOG

19 The View Catalog pick 43 provides the user with one of  
20 three types of free field entry. The user selects a radio  
21 button 23 to identify the nature of a free field entry 21.  
22 In a preferred embodiment, the user may select to enter by a  
23 part number 18, by a code associated with a part number that  
24 is identified by AMP Incorporated as a FaxCode 19, or a  
25 catalog number 20. The user enters an identifying number in  
26 the free field entry 21. Upon entry, the system  
27 electronically displays a catalog page for the identified  
28 item. An example of a catalog page is in Figure 5. Once an  
29 item is selected, the system permits the user to branch to a  
30 display of tools and other items related to the identified  
31 item 3 by selecting the view option 53. A user may choose  
32 the zoom option 54 to display the catalog page in a size that  
33 is one hundred percent of the original size of the actual  
34 paper based catalog page. Zoom is purely a scaling function  
35 of the existing screen display. A user may choose the page  
36 option 55 to page through electronic displays of catalog  
37 pages as one might page through a paper based catalog system.

#### 38 GET PART NUMBER INFORMATION

1       The Get Part Number Information pick 44 provides the  
2 user with a part number entry 22. The user enters a part  
3 number indicative of a single item 3. The user selects the  
4 radiobutton 23 to choose either a feature screen display or a  
5 Detailed Information Screen display for the item entered. If  
6 the part number is an item within the data file, the system  
7 retrieves the item 3 and identifies the family 1 associated  
8 with the part number and branches to the selected screen.

9       The process up to this point identifies a family 1 of  
10 items using conventional hierarchical techniques. Other  
11 methods of identifying a family 1 are equally appropriate.

#### 12 FEATURE SCREEN USER OPERATIONS

13       Upon identification of a family 1 to search, the system  
14 provides to the user the feature screen 9. Identification of  
15 a subfamily or item is processed from the same feature screen  
16 9. The minimum computing system required to run the process  
17 disclosed hereinafter has an Intel 80386 microprocessor or  
18 compatible upgrade with 4MBytes of RAM memory, MS DOS  
19 revision 6.0 or compatible upgrade, Microsoft Windows  
20 revision 3.1 or compatible upgrade, a mouse or other pointing  
21 device, a hard disk with 2MBytes of free disk space, and a  
22 Windows compatible CD-ROM drive.

#### 23 FEATURE SCREEN MANIPULATION

24       The feature screen 9, as shown in Figures 7 through 9,  
25 provides a display of a series of groupings 13 associated  
26 with the selected family 1. Each grouping 13 comprises one  
27 of the features 5 and a plurality of respective alternatives  
28 6, each feature 5 and respective alternatives being  
29 represented within the family 1. Each feature 5 generally  
30 describes a category of subject of the respective  
31 alternatives 6. The grouping 13 visually relates the feature  
32 5 to its respective alternatives 6 by the proximity of  
33 feature 5 to respective alternatives and by a frame 24  
34 enclosing them. Each grouping 13 contains either a plurality  
35 of the radiobuttons 23 or one listbox 15. Each alternative  
36 6 has associated therewith, a user selector. The user  
37 selector may be in the form of a radiobutton 23 that is white  
38 to denote nonselection ("off") and partially filled in black

1 to denote selection ("on"). A user selector may also be in  
2 the form of a listbox entry 16 that is in a standard font to  
3 denote nonselection ("off") and is in a reverse font to  
4 denote selection ("on"). The alternatives 6 may be selected  
5 or deselected via the radiobuttons 23 or listbox entries 16  
6 to create selected alternatives 37. The feature screen 9,  
7 therefore, provides a guided search in that it presents  
8 terminology for the features 5 and the alternatives 6 to the  
9 user prior to a search. A screen title 48 appears centered  
10 at the top of the display and the representative picture 17  
11 appears in the upper right corner of the display. A matching  
12 quantity box 47 and part number identification box 46 appear  
13 at the upper left corner of the display.

14 Positioning the interactive pointer 39 and clicking the  
15 mouse once, toggles a radiobutton 23 or listbox entry 16 to  
16 select ("on") or deselect ("off") an alternative 6. While in  
17 the feature screen 9, the user may select and deselect  
18 turning radiobuttons 23 and listbox entries 16 "on" and "off"  
19 as desired. In response to a user initiated signal to  
20 perform a search, the system retrieves information concerning  
21 which user selectors 16, 23 are turned "on" and to which  
22 alternatives 6 the user selectors 16, 23 that are turned "on"  
23 relate. The alternatives 6 turned "on" are the selected  
24 alternatives 37 and constitute the selection criteria 14 used  
25 in the search to generate a subfamily 2. In a preferred  
26 embodiment of the system, a double mouse click on a user  
27 selector 23 or 16 that is turned "off" selects the  
28 alternative 6 and then performs a search using the selection  
29 criteria 14.

30 A series of pushbuttons 201 through 208 are positioned  
31 below the matching quantity box 47 and part number  
32 identification box 46. Actuation of any one of the  
33 pushbuttons 201 through 208 via a mouse click performs a  
34 different system function. The prior screen pushbutton 201  
35 returns the user to the prior screen. The home pushbutton  
36 202 returns the user to the Main Menu 40. Help pushbutton  
37 203 provides the user with help information concerning the  
38 current screen. Criteria hold pushbutton 204 "holds" or

1 memorizes the current selection criteria 14 for later use.  
2 Criteria apply pushbutton 205 "applies" the selection  
3 criteria 14 most recently "held" using the criteria hold  
4 pushbutton 204. Advantageously, a selection criteria 14  
5 "held" while working with one family may be "applied" while  
6 working with a different family.

7 Erasure pushbutton 206 resets all currently selected  
8 alternatives 37. Detail view pushbutton 207 displays a  
9 property screen 12. An example of the property screen 12 is  
10 shown in Figure 10. Search pushbutton 208 performs a search  
11 according to the selection criteria 14.

#### 12 FEATURE SCREEN SEARCH

13 When the user initiates a search via the search  
14 pushbutton 208 or a double mouse click, the system gathers  
15 the selection criteria 14 from the user selectors 16, 23 that  
16 are toggled "on", indicating the selected alternatives 37.  
17 Using the selection criteria 14, the system searches the  
18 family 1 for items 3 that satisfy the selection criteria 14.  
19 A result of the search is a subfamily 2 of items, each item 3  
20 within the subfamily 2 having alternatives 6 that match the  
21 selection criteria 14. The system then searches the  
22 subfamily 2 to identify those alternatives 6 that remain  
23 available for further selection, available alternatives 7,  
24 and those alternatives 6 that are available within the family  
25 1, but are mutually exclusive with the selection criteria 14  
26 that generated the subfamily 2, unavailable alternatives 8.

#### 27 FEATURE SCREEN REVISION

28 Based on the available alternatives 7, the system  
29 revises the feature screen 9. A feature screen revised  
30 accordingly is shown in Figure 8. In Figure 8, the feature  
31 screen of Figure 7 is revised after selection of alternative  
32 6 "Magnet Wire" in the grouping associated with the feature 5  
33 "Wire Type". Each selected alternative 37 is displayed in a  
34 bold font and underlined. Each available alternative 7  
35 within the subfamily 2 is displayed in a bold font and is not  
36 underlined. The radiobutton 23 for each selected alternative  
37 37 and each available alternative 7 is enabled, meaning that  
38 they may be toggled in order to modify the current selection

1 criteria 14. An exception exists if one of the groupings 13  
2 comprises only one available alternative 7. In that case,  
3 the available alternative 7 is a forced alternative 34 and is  
4 turned "on", and the associated radiobutton 23 is disabled  
5 meaning it may not be deselected. A forced alternative 34  
6 indicates that for the selection criteria 14, all items  
7 necessarily have the forced alternative 34, and that there is  
8 no item satisfying the selection criteria 14 without the  
9 forced alternative 34. In Figure 8, an example of a "forced"  
10 alternative is "None" in the "Specials" grouping 13. This  
11 indicates that for all items 3 having "Magnet Wire" as a  
12 "Wire Type" there are no other "Specials" alternatives 6  
13 other than "None". Each unavailable alternative 8 within the  
14 subfamily 2 is displayed on the feature screen 9 and within  
15 the grouping 13, but is displayed in a grey shaded font. A  
16 radiobutton 23 associated with each unavailable alternative 8  
17 is disabled. In the case of a grouping 13 that comprises one  
18 of the listboxes 15, only available alternatives 7 are listed  
19 as listbox entries 16. The feature screen 9 also displays  
20 the quantity of items in the subfamily 2 in a matching  
21 quantity box 47.

#### 22 SELECTION CRITERIA MODIFICATION

23 After the feature screen is revised, the user may choose  
24 to modify the selection criteria 14 by selecting one or more  
25 available alternatives 7 or deselecting a selected  
26 alternative 37. Unavailable alternatives 8 may not be  
27 selected to modify the selection criteria 14 as their  
28 associated radiobuttons 23 are disabled. Similarly, forced  
29 alternatives 34 may not be deselected. This impairs the  
30 user's ability to select mutually exclusive alternatives 6.

31 The user may select one or more available alternatives 7  
32 and then initiate a search by clicking twice or using the  
33 search pushbutton 208. The system performs an identical  
34 search to the one disclosed hereinabove and revises the  
35 feature screen accordingly. By virtue of the fact that  
36 selected alternatives 37 are added to the selection criteria  
37 14, the subfamily 2 that satisfies the selection criteria 14  
38 necessarily has fewer items 3. A search and revision of the



1 feature screen 9 after each selected alternative 37 provides  
2 to the user an indication of how selection of one alternative  
3 affects the availability of remaining alternatives 6.  
4 Presentation of the affect of selected alternatives guides  
5 the user in selecting appropriate alternatives 6 according to  
6 the user's priorities. Iterative selections, searches, and  
7 revisions progressively narrows the subfamily 2 to isolate  
8 and identify a manageable number of items according to user  
9 priorities. A narrowing of the subfamily 2 from the feature  
10 screen 9 shown in Figure 8 is shown in Figure 9 and  
11 identifies a single item 3.

#### 12 AUTOMATIC PRIORITIZED DESELECTION

13 If the user has turned more than one user selector "on"  
14 prior to processing a search, it is conceivable that the  
15 selection criteria 14 contains mutually exclusive  
16 alternatives and will produce a subfamily 2 containing zero  
17 items 3. In the event of a zero item subfamily 2, an  
18 embodiment of the system indicates that no items are  
19 identified, and returns the user to the feature screen prior  
20 to initiating a search. As a zero item subfamily situation  
21 is considered undesirable, when there are no items in a  
22 subfamily 2, in a preferred embodiment the system will  
23 deselect a most recently selected alternative 37 and perform  
24 the search with a revised selection criteria 14. The  
25 deselection process will iterate, automatically deselecting  
26 the most recently selected alternative until there is at  
27 least one item 3 in the subfamily 2. Sequential deselection  
28 will provide a prioritized approach of automatically revising  
29 the selection criteria 14 and guaranteeing identification of  
30 at least one item for every search initiated. Automated  
31 deselection is based on the assumption that the alternative  
32 selected first in time is the highest priority in the  
33 selection criteria 14, with subsequent selections of  
34 alternatives 6 having descending priority to the user.

#### 35 USER DESELECTION

36 The user may also modify the selection criteria 14 by  
37 deselecting one of the selected alternatives 37.  
38 Deselecting is accomplished by clicking the mouse once with

1 the mouse pointer on one of the selected alternatives 37 to  
2 toggle the associated radiobutton 23 "off". User deselection  
3 of one of the selected alternatives 37 not part of the  
4 selection criteria 14 simply toggles the associated  
5 radiobutton 23 to "OFF". User deselection of one of the  
6 selected alternatives 37 that was part of the selection  
7 criteria 14 toggles the associated radiobutton 23 to "OFF"  
8 and, automatically initiates a search process to update the  
9 subfamily 2 and revise the feature screen 9 accordingly.  
10 User deselection and search is particularly helpful after  
11 identifying a family 1 via the Get Part Number Information  
12 Pick 44. Using the Get Part Number Information Menu and user  
13 deselection, the user, starting with a single part, may  
14 easily find a similar item by deselecting one or more of the  
15 selected alternatives 37.

#### 16 TRIGGER ALTERNATIVE AND DEPENDANT GROUPING

17 In certain cases, a grouping 13 logically applies only  
18 if an alternative from a different grouping is selected. In  
19 this case, selection of a trigger alternative (not shown)  
20 within one grouping, will give rise to available alternatives  
21 7 in a dependant grouping (not shown). Selection of one of  
22 the alternatives 6 in the dependant grouping will further  
23 refine the trigger alternative selection. With respect to  
24 cars for example, one grouping may be "transmission style"  
25 having "automatic transmission" and "manual transmission" as  
26 alternatives 6. The trigger alternative, "manual  
27 transmission", will give rise to the dependant grouping,  
28 "number of speeds" having alternatives 6 "three speed", "four  
29 speed", and "five speed". The alternatives 6 in the  
30 dependant grouping are not applicable to the users selection  
31 criteria 14 unless the trigger alternative is selected. In a  
32 preferred embodiment, therefore, the dependant grouping will  
33 not be displayed until selection of the trigger alternative.  
34 Although this is part of a preferred embodiment, it is not  
35 included in the source code disclosed herein.

#### 36 HIDDEN GROUPING

37 Alternatively, in a less preferred embodiment, all of  
38 the groupings 13 for a feature screen are initially

1 displayed. If, as a result of a search and for a subfamily  
2 2, all of the alternatives 6 within one of the groupings 13  
3 are unavailable alternatives 8, the grouping 13 is hidden and  
4 is not displayed. An example of a hidden grouping is  
5 illustrated in Figures 7 and 8 wherein the "Line" feature has  
6 no available alternatives 7 for the selection criteria 14  
7 comprising "Magnet Wire".

#### 8 PROPERTY SCREEN

9 At any point in the feature screen 9, a user may select  
10 the detail view pushbutton 207 to branch to the property  
11 screen 12. An example of the property screen 12 is shown in  
12 Figure 10. The property screen 12 displays the feature 5 and  
13 specific alternatives for a single item 3 in a tabular  
14 format, a feature table 32. The property screen 12 further  
15 displays additional properties 28 associated with the item 3  
16 in a tabular format a property table 33. Also displayed is a  
17 picture display of a line art 29 associated with the item 3,  
18 a comment area 30 and a subfamily part number list 31. A  
19 user may select any one of the part number entries 16 in the  
20 subfamily part number listbox 31 for display in the property  
21 screen 12.

22 The prior screen pushbutton 201, home pushbutton 202,  
23 and help pushbutton 203 are available from the property  
24 screen 12. View catalog pushbutton 209 branches the user to  
25 a screen with a representation of a catalog page for the item  
26 identified. In the embodiment of an electronic catalog for  
27 electrical connectors, the view catalog pushbutton 209  
28 branches to the screen an example of which is shown in Figure  
29 5. Print pushbutton 210 prints out the property screen 12.

#### 30 DATAFILES

31 The feature screen 9 and the processing associated  
32 therewith is a piece of an overall electronic catalog system  
33 which includes additional operations such as the Alphabetical  
34 search, Picture search, View Catalog, and Get Part Number  
35 Information. Only those datafiles and operations associated  
36 with the feature screen 9 and property screen 12 will be  
37 described hereinafter.

#### 38 DATABASE ORGANIZATION DATAFILE

1           A Database Organization Datafile 60 defines the features  
2   5 used in each unique feature screen 9 and the features 5 and  
3   properties 28 used in each unique property screen 12. A  
4   graphical representation of records in the Database  
5   Organization Datafile 60 is shown in Figure 11. Each record  
6   in the Database Organization Datafile 60 defines a set of  
7   features or properties and has seventeen fields: screen type  
8   601, screen 602, and feature one through feature fifteen 603.  
9   The screen type field 601 contains a value of "F" if the  
10   record defines features 5 and a value of "P" if the record  
11   defines properties 28. The screen field 602 contains a  
12   numerical value that represents each feature screen 9 or  
13   Property screen 12. If the screen type field 601 contains a  
14   value of "F", the feature one field 603 through feature  
15   fifteen field 603 each contains a value that represents one  
16   unique feature 5 associated with one of the groupings 13 on  
17   the feature screen 9. If the screen type field 601 contains  
18   a value of "P", the feature one field 603 through feature  
19   fifteen field 603 each contains a value representing one of  
20   the properties 28 to be listed on the property screen 12.  
21   The property screen 12 also uses the information in the  
22   record defining the feature screen 9 having the same value in  
23   the screen field 602 to display features 5 in the feature  
24   table 32. There are fifteen feature fields 603 per record.  
25   The feature screen 9, therefore, may contain up to fifteen  
26   features 5 and the property screen 12 may contain up to  
27   fifteen features 5 in the feature table 32 and up to fifteen  
28   properties 28 in the property table 33. If one or more of  
29   the feature fields 603 is blank, then the feature screen 9 or  
30   property screen 12 represented by the record will contain a  
31   number of groupings 13 less than fifteen and a property  
32   screen represented by the record will have fewer than 15  
33   features in the feature table 32 and/or fewer than fifteen  
34   properties in the property table 33.

### 35 PART NUMBER FEATURES DATAFILE

36           A Part Number Features Datafile 61 indicates the  
37   alternatives 6 for each feature 5 represented by an item 3.  
38   A graphical representation of records in the Part Number

1 Features Datafile 61 is shown in Figure 12. Each record in  
2 the Part Number Features Datafile 61 has eighteen fields:  
3 screen 611, item 612, alternative one 613 through alternative  
4 fifteen 613, and locate 614. The Part Number Features  
5 Datafile screen field 611 contains a value representing one  
6 feature screen 9. All records within the Part Number  
7 Features Datafile 61 having the same value in the screen  
8 field 611 constitute a family of items 1. The value  
9 contained within the Part Number Features Datafile screen  
10 field 611 is used to cross reference to the Database  
11 Organization Datafile 62 screen field 602 having the same  
12 value and having a screen type field 601 containing a value  
13 of "F" for feature screen type. The feature one through  
14 feature fifteen fields 603 of the Database Organization  
15 Datafile 60 correspond directly to alternative one through  
16 alternative fifteen fields 613 in the Part Number Features  
17 Datafile 61. The item field 612 contains a part number that  
18 represents a single item 3 in a family 1. The alternative  
19 one field 613 through alternative fifteen field 613 each  
20 contain a value representing one alternative 6 that is  
21 associated with the item 3 represented by one record. Each  
22 item 3 may be defined by up to fifteen alternatives 6. If  
23 any of the alternative one 613 through alternative fifteen  
24 fields 613 does not contain a value, then the field is unused  
25 and the alternative does not apply to the item. The locate  
26 field 614 contains a duplicate representation of the values  
27 contained in the feature screen field 611 and the alternative  
28 one through alternative fifteen fields 613, in a single  
29 field.

30 In order to determine which alternatives 6 relate to  
31 each item 3, cross reference is made between the Database  
32 Organization Datafile 60 and the Part Number Features  
33 Datafile 61. Each record in the Part Number Features  
34 Datafiles 61, defines one item 3. Associated with the item,  
35 by virtue of being contained in the same record, is a value  
36 contained within the screen field 611. Cross reference is  
37 made to the Database Organization Datafile 60 screen  
38 field 602 having the same value as the Part Number Features

1 Datafiles 61 screen field 611 value and a screen type 601  
2 value of "F". Values in the feature one 603 through feature  
3 fifteen fields 603 correspond to values in the alternative  
4 one 613 through alternative fifteen fields 613 to define  
5 which alternative 6 within each of the up to fifteen defined  
6 features 5 is represented by the item 3. In this way,  
7 therefore, each item 3 is defined as comprising a  
8 characteristic set of alternatives 6.

#### 9 FEATURE SCREEN GROUP DATAFILE

10 The Feature Screen Group Datafile 62 defines a profile  
11 of each feature screen 9 and the groupings 13 contained  
12 therein. A graphical representation of records in the  
13 feature screen Group Datafile 62 is shown in Figure 13. Each  
14 record of the feature screen Group Datafile 62 has four  
15 fields: a screen 621, a grouping sequence 622, selection type  
16 623, and feature 624. The screen field 621 contains a value  
17 representing one feature screen. This number represents the  
18 same feature screen as is represented in all data files  
19 having a screen field 602, 611, 621, 631, 692, 661, 671 and  
20 is used for cross referencing purposes. The feature field  
21 624 contains a unique number associated with one feature 5  
22 and the grouping sequence field 622 contains a value  
23 representing a placement sequence of the grouping 13 on the  
24 feature screen 9. The selection type field 623 contains a  
25 value of "R" if alternatives 6 associated with the grouping  
26 13 are selected via radio buttons 23 or a value of "L" if  
27 alternatives associated with the grouping 13 are selected via  
28 listbox entries 16. Although not implemented in a preferred  
29 embodiment, alternatives 6 may also be selected via a  
30 checklist (not shown), in which case the selection type field  
31 623 will have a value of "C".

#### 32 FEATURE SCREEN DESCRIPTION DATAFILE

33 The feature screen Description Datafile 63 defines the  
34 profile of the alternatives 6 for each feature 5 for a  
35 particular feature screen 9. A graphical representation of  
36 records in the feature screen Description Datafile 63 is  
37 shown in Figure 14. Each record of the feature screen  
38 Description Datafile 63 has four fields: screen 631, feature

1 632, alternative sequence 633, and alternative 634. The  
2 screen field 631 and feature field 632 contain values  
3 representing one feature screen 9 and feature 6 respectively  
4 similar to those found in the feature screen Group Datafile  
5 62 screen field 621 and feature field 624. The alternative  
6 field 634 contains a value representing an alternative 6 of  
7 the feature 5 specified in feature field 632. The  
8 alternative sequence field 633 represents the sequential  
9 position of the alternative 6 listed in alternative field 634  
10 if the grouping 632 has a selection type 623 of radio button,  
11 "R", or checklist "C".

#### 12 FEATURE NAME DATAFILE

13 The Feature Name Datafile 64 cross references an  
14 alphanumeric name for each feature 5. A graphical  
15 representation of records in the Feature Name Datafile 64 is  
16 shown in Figure 15. Each record has two fields: feature 641  
17 and name 642.

#### 18 FEATURE VALUE DATAFILE

19 The Feature Value Datafile 65 cross references numbers  
20 representing features 5 and alternatives 6 with an  
21 alphanumeric name. A graphical representation of records in  
22 the Feature Value Datafile 65 is shown in Figure 16. Each  
23 record in the Feature Value Datafile 65 has three fields:  
24 feature 651, alternative 652, and name 653. The system uses  
25 the value in the name field 653 to appropriately caption  
26 alternatives 6 within the groupings 13 on the feature screen  
27 9.

#### 28 FEATURE SCREEN IMAGE DATAFILE

29 The feature screen Image Datafile 66 defines an image  
30 file name of the picture 17 that is displayed in the upper  
31 right hand corner of the feature screen 9. A graphical  
32 representation of records in the feature screen Image  
33 Datafile 66 is shown in Figure 17. Each record in the  
34 feature screen Image Datafile 66 has two fields: a screen 661  
35 and an image file name 662. The value contained within the  
36 screen field 661 specifies the feature screen 9. The value  
37 contained within the image file name field 662 is the name of  
38 a data file from which the system may retrieve a bitmapped

1 representation of the representative picture 17 associated  
2 with the family of items 1 being searched in the specified  
3 feature screen 9.

#### 4 PART NUMBER PROPERTIES DATAFILE

5 A Part Number Properties Datafile 67 indicates the  
6 alternatives 6 represented for each item 3 for use with the  
7 Property Screen 12. A graphical representation of records in  
8 the Part Number Properties Datafile 67 is shown in Figure 18.  
9 Each record in the Part Number Properties Datafile 67 has  
10 seventeen fields; screen 671, item 672, and alternatives one  
11 673 through alternative fifteen 673. The Part Number  
12 Properties Datafile screen field 671 contains a value  
13 representing one property screen 12. The value contained  
14 within the Part Number Properties Datafile screen field 671  
15 is used to cross reference to the Database Organization  
16 Datafile 60 screen field 602 having the same value and having  
17 a screen type field 601 containing a value of "p" for  
18 property screen. The item field 672 contains a part number  
19 that represents a single item 3. The alternative one field  
20 673, alternative two field 673 through alternative fifteen  
21 field 673 each contain a value representing a single  
22 alternative 6 that is associated with the item 3 represented  
23 by one record. One item 3 is defined by up to fifteen  
24 alternatives. If any of the alternative one through  
25 alternative fifteen fields 673 does not contain a value, then  
26 the field is unused and the alternative does not apply.

#### 27 EXTRA PROPERTIES DATAFILE

28 An Extra Properties Datafile 68 defines additional  
29 characteristics for each item 3 for display in the Property  
30 Screen 12. A graphical representation of records in the  
31 Extra Properties Datafile 68 is shown in Figure 19. The  
32 additional characteristics do not represent alternatives and  
33 may not be searched, they are, however, displayed in the  
34 comment area 30 on the Property screen 12 as additional item  
35 information. Each record has three fields; item 681,  
36 comment 682, and image 683. The item field 681 contains a  
37 number representing one item 3.

#### 38 SCREEN TITLE DATAFILE



1       The Screen Title Datafile 69 cross references the screen  
2 number and screen type with an alphanumeric string. A  
3 graphical representation of records in the Screen Title  
4 Datafile 69 is shown in Figure 20. Each record in the Screen  
5 Title Datafile 69 has three fields: screen type 691, screen  
6 692, and title 693. The system uses the value in the title  
7 field 693 to appropriately label Screens with the identifying  
8 title 48 at the top of all system screens.

#### 9   SYSTEM SOFTWARE FLOW

10       The minimum system requirements for development of  
11 software to implement the process herein disclosed includes  
12 all hardware required for the system to use the software as  
13 well as Microsoft Visual Basic 3.0 Professional Edition and  
14 Accusoft Image Library VBX.

15       There are three program level files associated with the  
16 feature screen; FEATURES.FRM , GLOBAL.BAS , DATA.BAS, and  
17 PROPERTI.FRM. The PROPERTI.FRM is used to process property  
18 screen forms. FEATURES.FRM contains variable declarations and  
19 subroutines used to process feature screen forms. GLOBAL.BAS  
20 contains variable declarations global to the entire  
21 electronic catalog application software. DATA.BAS contains  
22 subroutines, global to the entire application software, that  
23 are executed by FEATURES.FRM, PROPERTI.FRM as well as other  
24 application forms. There are three main operations executed  
25 by FEATURES.FRM; feature screen Creation, Search, and feature  
26 screen Revision. Central to all three operations is a  
27 FrameInfo data array having one to fifteen elements.

28       GLOBAL.BAS defines the global variable FrameInfo having  
29 a data structure of FrameInfoType. FrameInfoType is also  
30 defined in GLOBAL.BAS. In a preferred embodiment, the  
31 FrameInfoType data structure includes; Feature, Type,  
32 CurSelection, DBColumn, DBFeatureNum, RBFeatVal array from 0  
33 to 7 elements, RBStatus array from 0 to 7 elements,  
34 SelectionOrder and NotApplicable, and is initialized to zero  
35 at the start of the feature screen operation. The executable  
36 code for the feature screen also uses a form, FRM 101, which  
37 is defined off line using the Visual Basic software tool.  
38 FRM 101 defines, among other things, an interactive screen

1 having fifteen frames and all relevant pushbuttons 25, each  
2 frame 24 containing eight radiobuttons 23 and a listbox 15.  
3 FRM 101 is a general and consistent screen structure adapted  
4 by FrameInfo data to display a particular feature screen 9.

5 After identifying a particular family of items 1 to  
6 search using the Alphabetical Search, the Picture Search, the  
7 Get Part Number Information, or other identification system,  
8 the system uses FEATURES.FRM passing to it a global variable  
9 ScreenNum 102. ScreenNum 102 indicates a numerical code for  
10 the appropriate feature screen 9 and is associated with one  
11 family of items 1 to be searched. ScreenNum 102 is the value  
12 contained in the screen fields 602, 611, 621, 631, 661, 671  
13 and 692 associated with a particular feature screen 9.

#### 14 FEATURE SCREEN CREATION

15 The feature screen creation operation comprises an  
16 iterative loop that loads the FrameInfo data array in proper  
17 sequential grouping order with the appropriate data. A  
18 graphical representation of an embodiment of the feature  
19 screen creation operation flow to provide the grouping  
20 captions 57 is shown in Figure 21. A loop repeats for each  
21 grouping 13 defined for the feature screen 9 incrementing an  
22 ordinate 103 for each iteration. The number of groupings 13  
23 and hence the number of iterations of the loop is up to  
24 fifteen in a preferred embodiment, although the system does  
25 not preclude modification of this number. For each  
26 sequential grouping 13, the system accesses the feature  
27 screen Group Datafile 62 to locate the record having a value  
28 in the screen field 621 and grouping sequence field 622 equal  
29 to ScreenNum 102 and the current FrameInfo ordinate 103  
30 respectively. For the record located,  
31 FrameInfo(ordinate).Type is set equal to the value in the  
32 selection type field 623 and FrameInfo(ordinate).Feature is  
33 set equal to the value in the feature field 624. If  
34 FrameInfo(ordinate).Type is equal to "L", then the listbox 15  
35 for the grouping 13 identified in the grouping sequence field  
36 622 is made visible. In a preferred embodiment, if there are  
37 more than eight alternatives 6 associated with one of the  
38 groupings 13, the grouping 13 comprises a listbox 15. The

1 system uses the value in FrameInfo(ordinate).Feature to cross  
2 reference the Feature Name Datafile 64 and locates the record  
3 having the same value in the feature field 641. The caption  
4 57 of the grouping 13 is set equal to the string value in the  
5 name field 642 of the record. The above operation continues,  
6 the result of which is to provide the caption 57 or name,  
7 representing a feature 5, for each grouping 13 on the feature  
8 screen 9.

9 The feature screen creation operation further comprises  
10 iterating a FrameInfo ordinate 103 from one to as many  
11 groupings 13 that exist for the feature screen 9. A  
12 graphical representation of an embodiment of the feature  
13 screen creation operation program flow labeling the  
14 alternatives 6 is shown in Figure 22. A nested operation  
15 iterates a count 104 corresponding to the number of  
16 alternatives 6 within the grouping 13 from zero to as many  
17 records as are found. When no matching records are found,  
18 the count is reset to zero, and the ordinate increments. The  
19 system uses ScreenNum 102, FrameInfo(ordinate).Feature, and  
20 count 104 plus one to cross reference the feature screen  
21 Description Datafile 63 and locate the record having matching  
22 values in the screen field 631, feature field 632, and  
23 alternative sequence field 633 respectively. The system uses  
24 FrameInfo(ordinate).Feature and alternative field 634 in the  
25 matching record in the feature screen Description Datafile 63  
26 to cross reference the Feature Value Datafile 65 and locate a  
27 record having a match with the feature 651 and alternative  
28 652 fields respectively. The name field 653 of the located  
29 record is used to label the respective alternative 6.

30 If FrameInfo(ordinate).Type is equal to "R", meaning  
31 that the grouping 13 is a set of radiobuttons 23,  
32 FrameInfo(ordinate).RBFeatVal(count) is set equal to the  
33 value in the alternative field 634 of the matching record in  
34 the feature screen Description Datafile 63. The radiobutton  
35 23 is labeled with the string value in the name field 653 of  
36 the matching record in the Feature Value Datafile 65.

37 If the FrameInfo(ordinate).Type has a value of "L",  
38 meaning that the grouping 13 is a listbox 15, the same cross

1 referencing and locating a matching record in the feature  
2 screen Description Datafile 63 and the Feature Value Datafile  
3 65 as in the case of the radiobutton 23 described hereinabove  
4 applies. In the case of a listbox 15, however, the Visual  
5 Basic system organizes listbox entries 16 alphabetically.  
6 The string value in the name field 653 is inserted as a  
7 listbox entry 16 for the grouping 13. The value in the  
8 alternative field 634 is stored in an ItemData array (not  
9 shown) associated with the listbox 15. The ItemData array is  
10 inherent to Microsoft Windows and is part of a conventional  
11 listbox definition and building operation of Visual Basic.  
12 The result of the operation is properly captioned  
13 alternatives 6, as either radiobuttons 23 or listbox entries  
14 16 for each grouping 13 used in the feature screen 9. In a  
15 preferred embodiment, if there are more than 8 alternatives 6  
16 for one of the feature 5 in the family 1, the grouping 13  
17 comprises a listbox. This particular distinction between the  
18 appropriate grouping style is a matter of design choice.  
19 When the grouping 13 and alternative 6 captions are set, the  
20 system adjusts the size of frames surrounding each grouping  
21 13 to aesthetically pleasing proportions and adjacent  
22 spacings.

23 The feature screen creation operation further comprises  
24 identifying, for each grouping 13, the column position of a  
25 corresponding feature 5 in the Database Organization Datafile  
26 60. The column position is stored into FrameInfo.DBColumn.  
27 The program flow of this operation is not shown in the  
28 drawings. The system locates the record in the Database  
29 Organization Datafile 60 having a value of "F", meaning  
30 feature screen, in screen type field 601, and a value in the  
31 screen field 602 equal to ScreenNum 102. The  
32 FrameInfo.DBFeatureNum array is set equal to the values in  
33 the feature one 603 through grouping fifteen fields 603  
34 respectively for the record located. Incrementing the  
35 ordinate for each value in the FrameInfo(ordinate).Feature  
36 array, the system locates the position of the equivalent  
37 value in the FrameInfo.DBFeatureNum array.

1 FrameInfo(ordinate).DBColumn is set equal to the position of  
2 the equivalent value in the FrameInfo.DBFeatureNum array.

### 3 FEATURE SCREEN MANIPULATION

4 Subsequent to the feature screen creation operation,  
5 response to the user's mouse movements and mouse clicks are  
6 administered by the Visual Basic System. If the user clicks  
7 on one of the radiobuttons 23, the system executes a  
8 subroutine entitled Radio\_Click defined in FEATURES.FRM.

9 Based upon the vicinity of the pointer 39, the system  
10 identifies the sequential position of a current grouping 35  
11 within the feature screen 9 and the sequential position of a  
12 current alternative 36 within the current grouping 35 to  
13 identify a FrameInfo(ordinate).RBStatus(count). If the  
14 pointer 39 is resting on one of the available alternatives 7  
15 that is also an unselected alternative 38, the  
16 FrameInfo.CurSelection for the current grouping 35 is set  
17 equal to the value of the current alternative 36 and  
18 FrameInfo.RBStatus for the current grouping 35 and the  
19 current alternative 36 is set to a negative one meaning  
20 "SELECTED". In a preferred embodiment capable of the  
21 automated deselective search, when one of the alternatives 6  
22 is selected, the FrameInfo.SelectionOrder for the current  
23 grouping 35 is set equal to a NumberOfSelections variable  
24 (not shown) plus one and the NumberOfSelections variable is  
25 incremented. If the pointer 39 is resting on one of the  
26 alternatives having a FrameInfo.RBStatus of negative two  
27 meaning "FORCED" or zero meaning that it is one of the  
28 unavailable alternatives 8, there is no operation. If the  
29 pointer 39 is resting on one of the available alternatives 7  
30 that is selected, then FrameInfo.CurSelection for the current  
31 grouping is reset. The NumberOfSelections variable is  
32 decremented and the FrameInfo.Selection order is resequenced.  
33 The system initiates a search operation.

34 If the user clicks on one of the listbox entries 16, the  
35 system executes a subroutine entitled ListBox\_click in  
36 FEATURES.FRM. The system identifies the current grouping 35  
37 and the current alternative 36. If the pointer 39 is resting  
38 on one of the available alternatives 7 that is not selected,

1 the FrameInfo.CurSelection for the current grouping 35 is set  
2 equal to the current alternative 36 and  
3 FrameInfo.SelectionOrder is set equal to a value of the  
4 maximum current SelectionOrder which is expressed in the  
5 NumberOfSelections variable plus one and the  
6 NumberOfSelections variable is incremented. If the pointer  
7 39 is resting on one of the available alternatives 7 that is  
8 selected, then FrameInfo.CurSelection for the current  
9 grouping 35 is reset. The NumberOfSelections variable is  
10 decremented and the FrameInfo.Selection order is resequenced.  
11 The system initiates a search operation.

#### 12 SEARCH OPERATION

13 When the user either selects the search pushbutton 208  
14 or double clicks on one of the unselected alternatives 38,  
15 the system performs a search operation using the current  
16 selection criteria 14. The current selection criteria 14 is  
17 defined as the set of selected alternatives 37 for the  
18 feature screen in which the user is operating, and is found  
19 in the FrameInfo.CurSelection array. A graphical  
20 representation of an embodiment of the search operation  
21 program flow is shown in Figure 23. At the beginning of the  
22 search, in order to administer the radiobuttons 23, the  
23 system initializes the FrameInfo.RBStatus array for all  
24 available alternatives 7 to zero, and initializes  
25 FrameInfo.NotApplicable for all groupings 13 to zero. In  
26 order to administer the listboxes 15, a two dimensional  
27 dynamically allocated ListStatus array (not shown) is  
28 declared having a first dimension of fifteen and a second  
29 dimension of one. A ListStatusSize variable (not shown) is  
30 initialized to one and retains a value representing the size  
31 of the second dimension of the ListStatus array. A  
32 ListCounter array (not shown) having fifteen elements records  
33 the number of entries 16 added to each listbox 15 and is  
34 initialized to zero.

35 The system identifies all of the items 3 that match the  
36 current selection criteria 14. Using FrameInfo.CurSelection  
37 the system cross references to the Part Number Features  
38 Datafile 61 to locate a record having a value in the

1 appropriate alternative field 613 equivalent to the first  
2 nonzero Frame Info.CurSelection. Incrementing an ordinate  
3 103, the system identifies a FrameInfo(ordinate).CurSelection  
4 having a value greater than zero.  
5 FrameInfo(ordinate).DBCColumn is used to identify the  
6 appropriate column in the Part Number Features Datafile 61.  
7 The system locates a record in the Part Number Features  
8 Datafile 61 having a matching value in the appropriate  
9 column. When a record is located having the alternative 6  
10 that matches, the system compares the remaining alternatives  
11 6 in the selection criteria 14 against values in the  
12 alternative fields 613 corresponding to the alternatives in  
13 the selection criteria 14. The system checks the remaining  
14 nonzero FrameInfo.CurSelection value against values in the  
15 appropriate alternative one through alternative fifteen  
16 fields 613. If all of the selected alternatives 37 in the  
17 selection criteria 14 have a corresponding alternative field  
18 613 in the located record, the located record is a matching  
19 record for the current selection criteria 14. The matching  
20 record, therefore, represents an item 3 in the subfamily 2.

21 The system processes each item 3 in the subfamily 2 to  
22 identify which alternatives 6 are available alternatives 7  
23 within the subfamily 2. If the record is a matching record,  
24 the alternative fields 613 in the matching record not  
25 specified in the selection criteria 14, are processed in an  
26 iterative loop to update the available alternatives 7 and  
27 unavailable alternatives 8 in FrameInfo. FrameInfo is used  
28 to revise the feature screen 9 based upon the results of the  
29 selection criteria 14 and search or more precisely, based  
30 upon the existing subfamily 2.

31 For each alternative field 613 checked, the following  
32 operation applies. If the alternative field 613 has no  
33 value, meaning that the grouping 13 associated with the  
34 alternative field 613 is not applicable to the item 3 defined  
35 in the matching record, the FrameInfo.NotApplicable is set to  
36 a value of one. The FrameInfo.NotApplicable variable is,  
37 therefore, zero if all items 3 in the subfamily 2 have a  
38 value in the alternative field 613 for the respective

1 grouping 13, and is nonzero if any one item 3 in the  
2 subfamily 2 has no value in the respective alternative field  
3 613 for the respective grouping 13. FrameInfo.NotApplicable  
4 having a nonzero value indicates that the associated grouping  
5 does not logically apply to all of the items in the subfamily  
6 2. Therefore, with respect to a preferred embodiment, if  
7 FrameInfo.NotApplicable is set to nonzero, the respective  
8 grouping 13 is not displayed. Alternatively, in a less  
9 preferred embodiment, a grouping 13 is not displayed if all  
10 of the respective alternatives 6 are unavailable alternatives  
11 8.

12 If the grouping 13 is a set of radiobuttons 23, and the  
13 alternative field 613 has a value, FrameInfo.RBStatus  
14 associated with the grouping 13 and alternative 6 specified  
15 in the alternative field 613 is set to a one, meaning that  
16 the radiobutton 23 for the specified alternative 6 is an  
17 available alternative 7. Available alternatives 7 are shown  
18 on the feature screen 9 in a bold font. If the grouping 13  
19 is a listbox 15 and the alternative field 613 has a value,  
20 the system determines whether the alternative 6 specified in  
21 the alternative field 613 is already listed in the ListStatus  
22 array. If the alternative 6 has not already been added, the  
23 ListCounter is incremented for the respective listbox 15, the  
24 ListStatusSize is set to reflect the size of the largest  
25 listbox, and if necessary, the ListStatus array 110 is  
26 dynamically allocated a single additional element. The  
27 ListStatus array 110 for the sequential position of the  
28 grouping 13, specified in the first dimension, and the  
29 sequential position of the alternative 6, specified in the  
30 second dimension, is set equal to the value in the  
31 alternative field 613. The operation repeats for all  
32 alternative fields 613 that were not used to locate an item  
33 from the selection criteria.

34 In a preferred embodiment, if a search operation results  
35 in a subfamily 2 having no items 3, the most recently  
36 selected alternative will be automatically deselected and the  
37 search operation will repeat with the revised selection  
38 criteria 14. The automatic deselection of the most recently



1 selected alternative will repeat until the search operation  
2 results in a subfamily 2 having at least one item 3.  
3 Although not implemented in the source code of the software  
4 disclosed herein, the automatic deselection operation would  
5 be implemented as follows. Where FrameInfo  
6 (ordinate).SelectionOrder is equal to the NumberOfSelections  
7 variable, the FrameInfo(ordinate).CurSelection and  
8 FrameInfo(ordinate).SelectionOrder will be reset to zero, and  
9 the Number of Selections will be decremented. The same  
10 search process will be initiated using the new selection  
11 criteria 14. The automatic deselection will repeat until the  
12 search results in a subfamily 2 having one or more items 3.

13 The entire FrameInfo updating process occurs for every  
14 record in the Part Number Features Datafile 61. The results  
15 of the Searching operation are updated FrameInfo and  
16 ListStatus arrays. The FrameInfo and ListStatus arrays are  
17 used to revise the feature screen according to the results of  
18 the search.

#### 19 FEATURE SCREEN REVISION

20 Using the updated FrameInfo and ListStatus arrays, the  
21 system revises the feature screen 9 accordingly in the  
22 feature screen revision operation. A graphical  
23 representation of an embodiment of the feature screen  
24 revision operation is shown in Figure 24. The feature screen  
25 revision operation comprises enabling radiobuttons 23 for the  
26 available alternatives 7, disabling the radiobuttons 23 for  
27 the unavailable alternatives 8, identifying and disabling the  
28 radiobuttons 23 for forced alternatives 34, updating the  
29 ItemData array with listbox entries 16 for the available  
30 alternatives 7 and unavailable alternatives 8, and removing  
31 the grouping 13 from the feature screen 9 if all of the  
32 alternatives 6 in the grouping 13 are unavailable  
33 alternatives 8. A loop incrementing the ordinate 103  
34 iterates for each grouping 13. In a preferred embodiment, if  
35 FrameInfo.NotApplicable is nonzero, the grouping 13  
36 associated with the FrameInfo(ordinate) will not be  
37 displayed. If the grouping 13 comprises radiobuttons 23, the  
38 radiobutton 23 associated with each element in the

1 FrameInfo.RBStatus array that equals zero is disabled. If  
2 the grouping 13 is a listbox 15, the ListStatus array for the  
3 grouping 13 is searched against the ItemData array. If an  
4 element in the ItemData array for the grouping 13 is not  
5 found in the ListStatus array 110, it is removed from the  
6 ItemData array and therefore does not appear as one of the  
7 listbox entries 16. For each grouping 13 that does not  
8 contain a selected alternative 37, the system counts the  
9 number of available alternatives 7 in the  
10 FrameInfo(ordinate).RBStatus array. If there is one and only  
11 available alternative 7, the one available alternative 7 is  
12 set to a negative two, meaning "FORCED", and the associated  
13 radiobutton 23 is turned "on" and is displayed as partially  
14 filled in black, but it is disabled meaning that it may not  
15 be toggled to "off" during the feature screen manipulation  
16 operation.

17 After the feature screen revision operation, the system  
18 returns to the feature screen manipulation operation  
19 permitting the user to modify the selection criteria 14 based  
20 upon the results of the search.

## 21 INTERNET EMBODIMENT

### 22 INTERNET EMBODIMENT USER FLOW

23 In an embodiment of the invention in an Internet  
24 environment, there is a server computer 125 and a client  
25 computer 126. All of the program files and data files  
26 described in the local embodiment reside on the server 125.  
27 In the Internet embodiment, the server 125 comprises a  
28 computer having a minimum of 8 Mbytes of RAM and 50 MBytes of  
29 available hard disk memory and an Intel Pentium processor  
30 running Microsoft Windows 3.1. The server 125 may have  
31 hardware access to the Internet via any conventional method.  
32 Server 125 communication on the Internet uses Microsoft  
33 Windows World Wide Web Server using HyperText Transport  
34 Protocol ("HTTPD") from the National Center for  
35 Supercomputing Applications ("NCSA") at the University of  
36 Illinois and Windows TCP/IP package that supports Windows  
37 Sockets interface, preferably Chameleon TCP/IP for Windows by  
38 NetManage, Inc. of Cupertino, CA. The client 126 is a

1 computer having a minimum of 4MBytes of RAM and an Intel  
2 80386 processor running Microsoft Windows 3.1 and having a  
3 display device, keyboard, and mouse. The client 126 has  
4 TCP/IP access to the Internet, such as Chameleon by  
5 NetManage. The client 126 also requires a Mosaic compatible  
6 browser, such as AIR Mosaic by SPRY, Inc. of Seattle, WA.

7 A preferred embodiment of the Internet embodiment of the  
8 electronic catalog application mirrors the user flow in the  
9 local embodiment as much as possible. Based upon certain  
10 restrictions inherent in current Internet capabilities with  
11 respect to building an interactive screen, the feature screen  
12 9 for the Internet embodiment has a layout that is slightly  
13 different from the local embodiment. The feature screen 9  
14 for the Internet embodiment is shown by way of example in  
15 Figures 26 through 29.

#### 16 INTERNET EMBODIMENT PROGRAM FLOW

17 The client 126 initiates a request to the server 125 for  
18 the electronic catalog searching application via the  
19 Internet. The server 125 detects the request. Receipt of  
20 the request executes the requested application on the server  
21 125 that permits a user on the client 126 to select a family  
22 1 or subfamily 2. Example of Main Menu, Alphabetical search,  
23 Picture Search, and View Part Number screens are shown in  
24 Figures 31 through 35. When the family 1 or subfamily 2 is  
25 chosen, the server 125 sends a feature screen status 127 to  
26 the client 126. The feature screen status 127 comprises a  
27 feature screen code, ScreenNum 102 in a preferred embodiment,  
28 all features 5 appropriate to the feature screen 9 specified  
29 in ScreenNum 102, all available alternatives 7, all  
30 unavailable alternatives 8, and the selection criteria 14.  
31 As the selection criteria 14 is always sent, it may comprise  
32 zero selected alternatives 37. It is apparent, therefore,  
33 that the server 125 sends all of the information necessary to  
34 define the current subfamily 2 to the client 126. The  
35 information, therefore, need not be retained in memory on the  
36 server 125. This particular feature renders it particularly  
37 appropriate for an Internet environment. The client 126  
38 receives the feature screen status 127 and displays the

1 feature screen 9 accordingly. An example of the feature  
2 screen 9 on the Internet is shown in Figure 26 through 29.  
3 The user on the client, makes selections from among the  
4 available alternatives 7 generating a selection criteria 14  
5 different from that which was set to it. The client 126  
6 initiates a search with the modified selection criteria 14.  
7 The client 126 sends to the server 125, the ScreenNum 102  
8 value sent to it by the server, and the modified selection  
9 criteria 14. The server 125 receives the ScreenNum 102 and  
10 the selection criteria 14. The server 125 executes the  
11 search operation as disclosed hereinabove using the revised  
12 selection criteria 14 and generates the feature screen status  
13 127. The server 125 sends the feature screen status 127 that  
14 has been updated based on the modified selection criteria 14  
15 to the client 126. The client 126 receives the feature  
16 screen status 127 and displays the updated feature screen 9.  
17 This process may iterate similar to the local version to  
18 further narrow the subfamily as desired.

19 The feature screen 9 in a preferred embodiment, permits  
20 the user to choose to view the representative picture 17 by  
21 selecting a view family picture pushbutton 211. When the  
22 user on the client 126 selects the view family picture  
23 pushbutton 211, the client 126 sends a request to the server  
24 125 for the picture 17 as well as the feature screen code,  
25 ScreenNum 102.

26 The user accesses the property screen 12 by selecting  
27 the detail view pushbutton 207. An example of the property  
28 screen 12 format for the Internet embodiment is shown in  
29 Figure 30. When the user on the client 126 selects the  
30 detail view pushbutton 207, the client 126 sends to the  
31 server 125 the feature screen code, ScreenNum 102, and the  
32 selection criteria 14. The server 125 returns the features  
33 5, the alternatives 6, the properties 28, and the line art 29  
34 for the item 3, or the first item in a larger subfamily 2,  
35 satisfying the selection criteria 14. To view the property  
36 screen 12 for the next item 3 listed in the subfamily 2, the  
37 user on the client 126 selects a next pushbutton 212.  
38 Selection of the next pushbutton 212 causes the client 126 to

1 initiate a request to the server 125. The client 126 sends  
2 to the server 125 the feature screen code, the selection  
3 criteria 14, a request for property screen information, and  
4 an indication of which item of the subfamily 2 is of  
5 interest.

1 CLAIMS:

2 I claim:

3 1. A method for operating a computer system having a CPU, a  
4 memory, and a display in order to assist a user to identify a  
5 subfamily of items within a family of items, comprising the  
6 steps of:

7 providing to said computer memory a computer readable  
8 data file of stored information representing at least one  
9 family of items, said data file identifying at least one  
10 alternative for each item;

11 causing said CPU to read said data file;

12 displaying a feature screen indicating said alternatives  
13 represented in the family;

14 utilizing said CPU to accept at least one selected  
15 alternative;

16 utilizing said CPU to determine the subfamily of items,  
17 wherein each said item in the subfamily satisfies said  
18 selected alternatives;

19 utilizing said CPU to determine available alternatives  
20 represented in the subfamily and unavailable alternatives  
21 unrepresented in the subfamily; and

22 utilizing said CPU to revise said feature screen  
23 indicating said available alternatives as distinct from said  
24 unavailable alternatives.

25

26 2. The method according to claim 1 wherein each family has at  
27 least one feature associated therewith and further comprising  
28 the step of:

29 displaying at least one grouping wherein each said  
30 grouping comprises one of said features visually related to  
31 respective alternatives.

32

33 3. The method according to claim 2 wherein respective  
34 alternatives within one of said groupings are mutually  
35 exclusive of each other.

36

37 4. The method according to claim 1 and further comprising the  
38 steps of:

1 causing said CPU to modify said selected alternatives  
2 and repeating the steps of accepting said selected  
3 alternatives, determining the subfamily, determining said  
4 available alternatives, and revising said feature screen.  
5

6 5. The method according to claim 4 wherein said selected  
7 alternatives are automatically modified by deselecting a most  
8 recently selected alternative if the subfamily comprises zero  
9 items.

10

11 6. The method according to claim 1 and further comprising the  
12 step of indicating the number of items in the subfamily.  
13

14 7. The method according to claim 1 and further comprising the  
15 steps of:

16 displaying said available alternatives in a first  
17 format; and

18 displaying unavailable alternatives in a second format.  
19

20 8. The method according to claim 7 and further comprising the  
21 step of:

22 displaying said selected alternatives in a third format.  
23

24 9. The method according to claim 8 wherein said first format  
25 is a bold font and said second format is a grey shaded font  
26 and said third format is a bold and underlined font.  
27

28 10. The method according to claim 2 and further comprising  
29 the step of:

30 causing said CPU to provide an interactive pointer and  
31 displaying information specific to one of said features upon  
32 a user initiated signal when said pointer is pointing to a  
33 feature caption on said feature screen.  
34

35 11. The method according to claim 2 wherein at least one of  
36 said groupings is hidden from view if all said respective  
37 alternatives are also unavailable alternatives.  
38

1 12. The method according to claim 2 wherein at least one of  
2 said groupings comprises a trigger alternative, and further  
3 comprising the step of:

4 displaying a dependant grouping only if said trigger  
5 alternative is one of said selected alternatives.  
6

7 13. The method according to claim 2 further comprising the  
8 step of:

9 causing said CPU to automatically selecting one of said  
10 available alternatives if all remaining respective  
11 alternatives are unavailable alternatives.  
12

13 14. The method according to claim 1 wherein;

14 the steps of providing a computer readable data file,  
15 reading said data file, and determining said subfamily are  
16 executed on a server;

17 the steps of displaying said feature screen, accepting  
18 said selected alternatives, and revising said feature screen  
19 are executed on a client; and

20 said server is accessible by said client.  
21

22 15. The method according to claim 14 and further comprising  
23 the steps of:

24 causing said server to receive from said client a  
25 feature screen code and said selected alternatives; and

26 causing said server to send to said client a feature  
27 screen status.  
28

29 16. The method according to claim 15 wherein said feature  
30 screen status comprises said feature screen code, available  
31 alternatives, unavailable alternatives, and said selected  
32 alternatives.  
33

34 17. A method for operating a coputer system having a CPU, a  
35 memory, and a display in order to assist a user to identify a  
36 subfamily of items within a family of items, comprising the  
37 steps of:



1 providing to said computer memory a computer readable  
2 data file of stored information representing at least one  
3 family of items, wherein the family has features associated  
4 therewith and each said feature has alternatives associated  
5 therewith, said family comprising a plurality of items  
6 wherein each said item has one said alternative associated  
7 with each said feature;

8 displaying said features and said alternatives on a  
9 feature screen,

10 utilizing said CPU to accept at least one selected  
11 alternative;

12 utilizing said CPU to determine the subfamily wherein  
13 each item in the subfamily satisfies said selected  
14 alternatives;

15 utilizing said CPU to determine available alternatives  
16 and unavailable alternatives represented by the subfamily,  
17 utilizing said CPU to revise said feature screen to  
18 reflect said available alternatives as distinct from said  
19 unavailable alternatives.

20

21 18. The method according to claim 17 wherein;

22 each said available alternative is displayed in a first  
23 format;

24 each said unavailable alternative is displayed in a  
25 second format; and

26 each said selected alternative is displayed in a third  
27 format.

28

29 19. The method according to claim 18 wherein said first  
30 format comprises a grey shaded font, and said second format  
31 comprises a bold font.

32

33 20. The method according to claim 17 and further comprising  
34 the step of:

35 displaying at least one grouping, each said grouping  
36 comprising one of said features visually related to  
37 respective alternatives.

38

1 21. The method according to claim 20 wherein, if said  
2 grouping does not contain at least one available alternative,  
3 said grouping is not displayed.

4

5 22. The method according to claim 17 further comprising the  
6 step of:

7 displaying a plurality of pictures, each said picture  
8 representing one family and being selectable by a user to  
9 identify one family.

10

11 23. The method according to claim 17 further comprising the  
12 step of:

13 displaying an alphanumeric list of entries, each said  
14 entry representing one family and being selectable by a user  
15 to identify one family.

16

17 24. The method according to claim 17 further comprising the  
18 step of providing a user input area and receiving an  
19 alphanumeric reference for identifying a family.

20

21 25. The method of claim 17 further comprising the steps of:

22 providing a user selector for each item of said  
23 subfamily;

24 receiving a signal identifying a single item within said  
25 subfamily; and

26 displaying additional information about said item.

27

28 26. The method of claim 25 wherein said additional  
29 information comprises detailed specifications concerning said  
30 item.

31

32 27. The method of claim 25 wherein said additional  
33 information comprises a pictorial representation of said  
34 single member.

35

36 28. The method of claim 25 wherein said additional  
37 information comprises related items.

38

1 29. A system for assisting a user in identifying a subfamily  
2 of items within a family of items, comprising:

3 a computer having memory, a display device, a user input  
4 device, and an interactive pointer;

5 a computer readable data file stored in said memory,  
6 said data file representing at least one family of items and  
7 identifying at least one alternative for each item;

8 a feature screen displayed on said display device, said  
9 feature screen indicating available alternatives represented  
10 in the family; and

11 said user input device accepting at least one selected  
12 alternative, wherein said computer determines a subfamily of  
13 items wherein each said item in said subfamily contains said  
14 selected alternatives, and further wherein, said display  
15 device revises said feature screen indicating said available  
16 alternatives represented in the subfamily and unavailable  
17 alternatives unrepresented in the subfamily.

18  
19 30. The system according to claim 29 wherein said computer  
20 having said computer readable data file comprises a server  
21 computer accessible by a client computer having said display  
22 device, said user input device, and said interactive pointer.  
23

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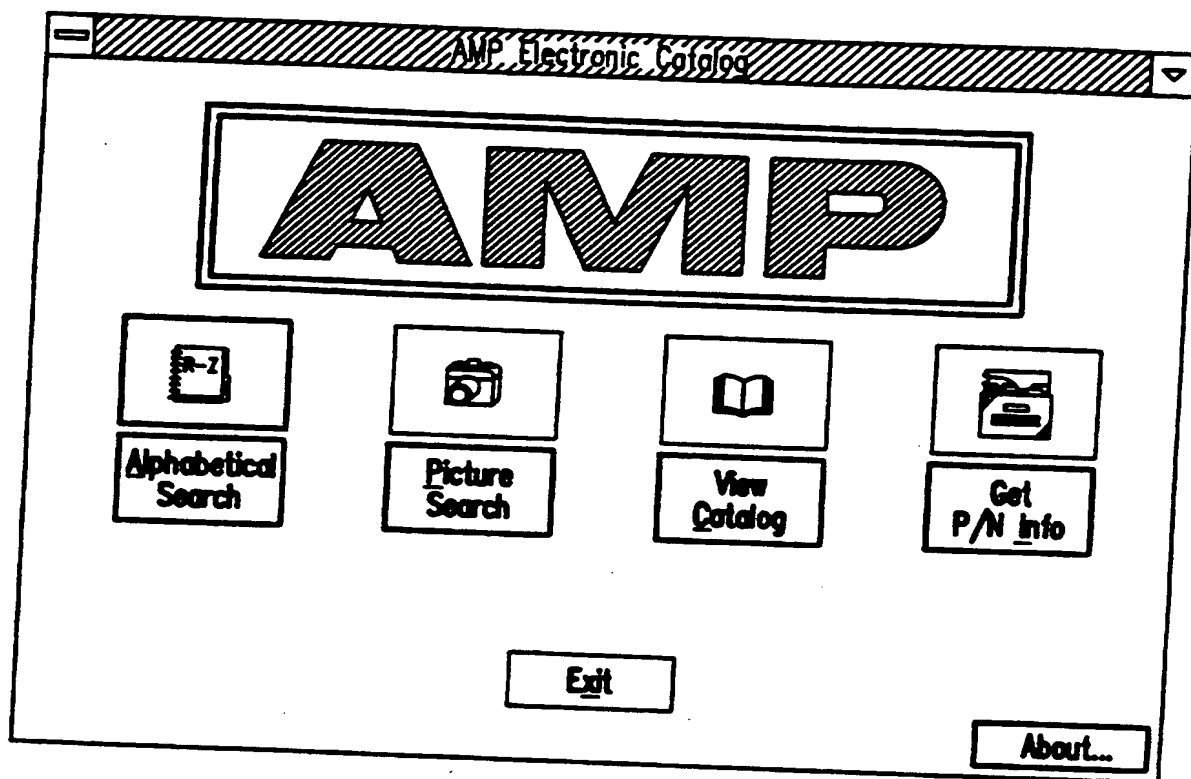


FIG. 1

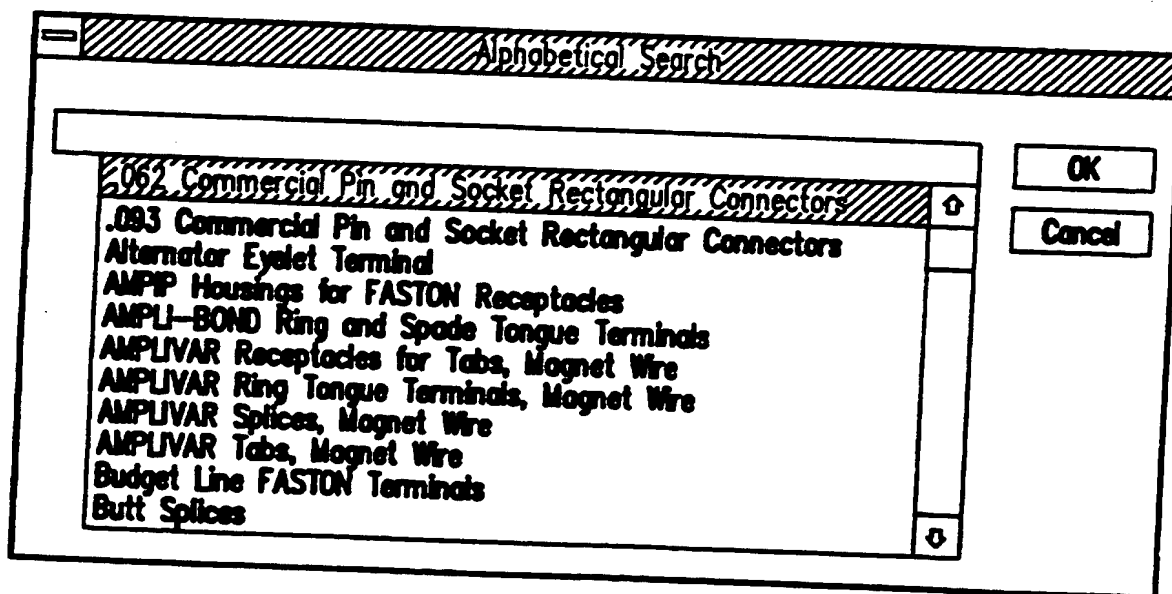


FIG. 2

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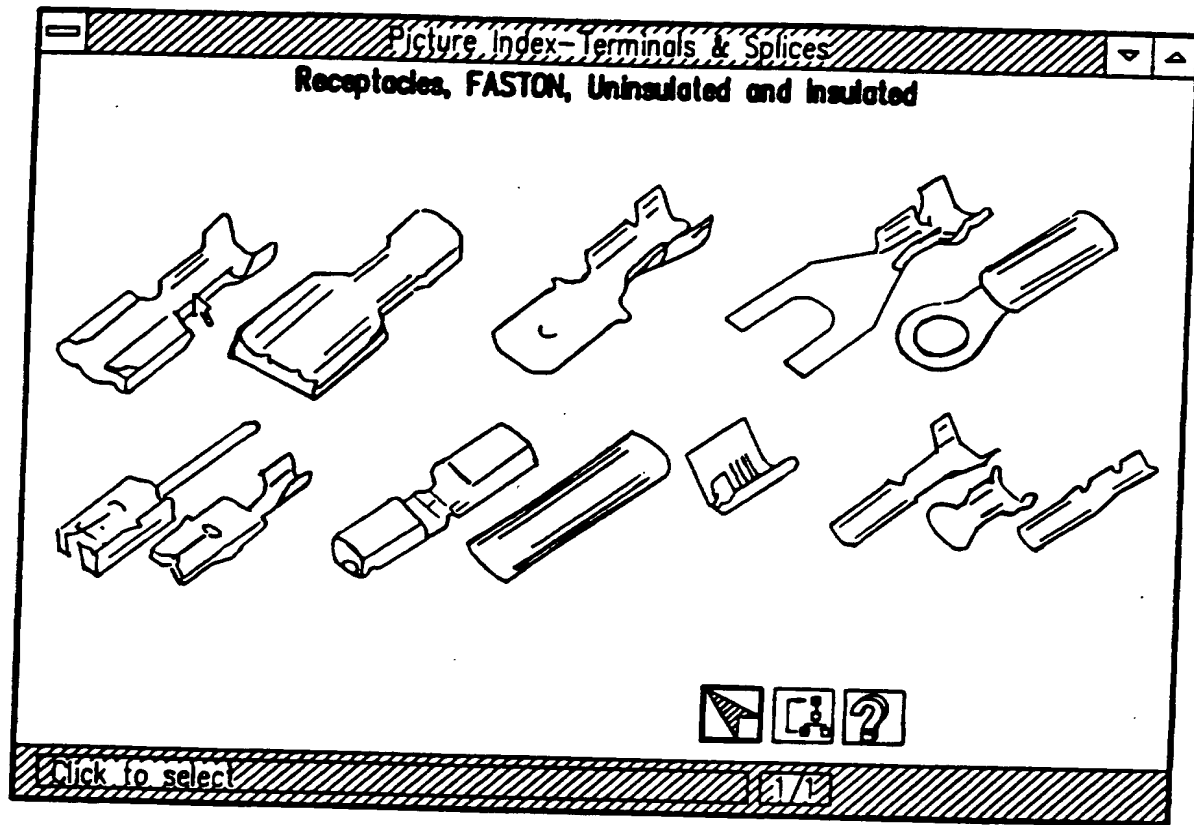


FIG. 3

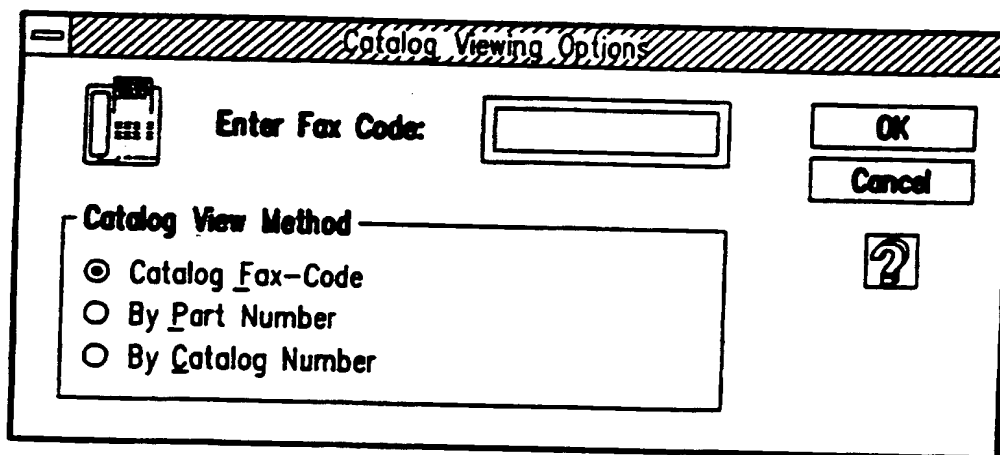


FIG. 4

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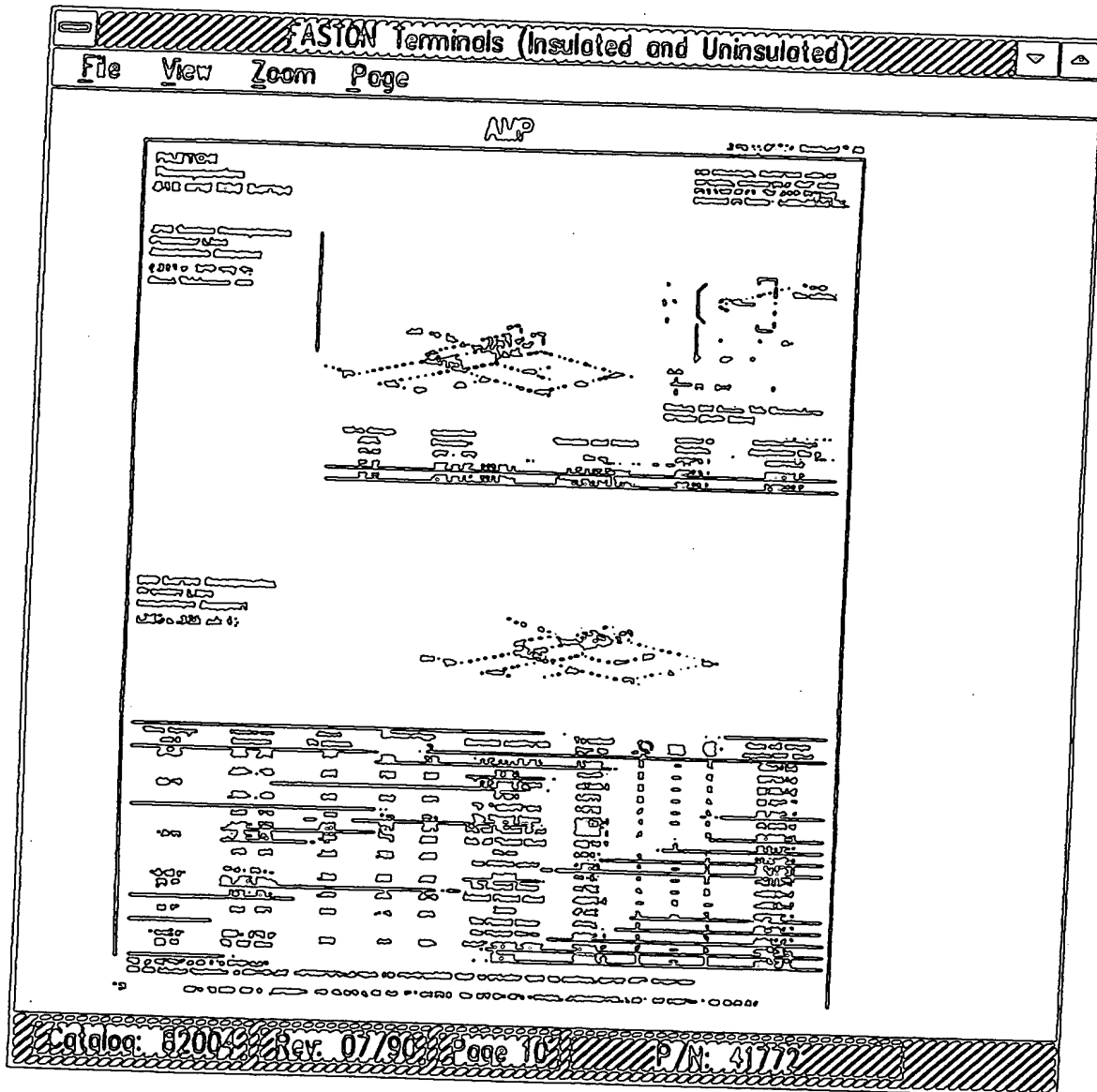



FIG. 5

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Part Number Viewing Options

 Enter Part Number:

Catalog View Method

☒ Show Detailed Information Screen

☐ Show Feature Screen

FIG. 6

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FIG. 7

9

47

46

48

17

FASTON Receptacles—Uninsulated

Matching Qty: 201 202 203 204 205 206 207 208

P/Nt: [ ]

13

Specs: [ ]

24

Wire Type: [ ]

39

5

6

36

3

Finish: [ ]

Line: [ ]

Crmp Type: [ ]

Wire Range: [ ]

Insulation Dia. [ ]

Insulation Force [ ]

Material [ ]

Receptacle Style [ ]

Tab Fit [ ]

Insulation Support [ ]

102

1500

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FIG. 8

FASTON Receptacles-Uninsulated

Matching Qty. 5 P/Nt

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

**Specials**

☒ None

☐ For Posted Hermetic Tabs

☐ Receptacle/Tab Combination

**Tab Fit**

☒ .250 x .020

☐ .250 x .032

**Insulation Support**

☒ Insulation Support

☐ Non-Insulation Support

**Wire Type**

☐ Regular Wire

☒ Magnet Wire

**Wire Range**

18-14

18-14/(2)17

20-16/(2)20/23

**Receptacle Style**

☒ Straight

☐ Flag

☐ Reversible Flag

**Insulation Dia.**

.050-.080

.100-.140/(2).060MAX

.120-.170

**Insulation Force**

☐ Normal

☐ Low

**Material**

☒ Brass

☐ Phosphor-Bronze

☐ Steel

**Finish**

☐ None

☐ Tin

☐ Pre Tin

☐ Silver

☐ Nickel

7

8

☒ "F"

☐ Tab-Lok

**Crimp Type**

☒ "F"

☐ Tab-Lok

1600

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BNSDOCID: <WO\_9612238A1\_1\_>

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**FIG. 9**

FASION Receptacles-Insulated										
Matching Qty: <input type="text" value="1"/>	P/Nt: <input type="text" value="60384-1"/>									
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Specials</b> <input checked="" type="radio"/> None <input type="radio"/> For Posted Hermetic Tabs <input type="radio"/> Receptacle/Tab Combination		<b>Tab Fit</b> <input type="text" value=".250 x .032"/>		<b>Receptacle Style</b> <input checked="" type="radio"/> Straight <input type="radio"/> Flag <input type="radio"/> Reversible Flag		<b>Insulation Support</b> <input checked="" type="radio"/> Insulation Support <input type="radio"/> Non-Insulation Support		<b>Material</b> <input checked="" type="radio"/> Brass <input type="radio"/> Phosphor-Bronze <input type="radio"/> Steel	
<b>Wire Type</b> <input type="radio"/> Regular Wire <input checked="" type="radio"/> Magnet Wire		<b>Wire Range</b> <input type="text" value="20-16/(2)20/23"/>		<b>Insulation Dia.</b> <input type="text" value=".100-.140/(2).060MAX"/>		<b>Insertion Force</b> <input checked="" type="radio"/> Normal <input type="radio"/> Low		<b>Finish</b> <input checked="" type="radio"/> None <input type="radio"/> Tin <input type="radio"/> Pre Tin <input type="radio"/> Silver <input type="radio"/> Nickel		
<b>Crimp Type</b> <input checked="" type="radio"/> "F" <input type="radio"/> Tab-Lok		<input type="text" value="1600"/>								

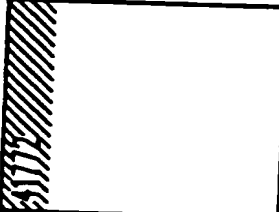
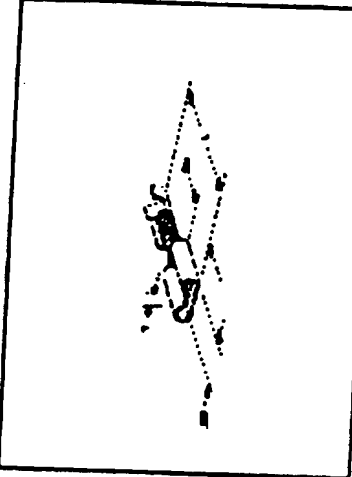
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FIG. 10

P/N Features		P/N Properties	
Tab Fit	.250 X .032	Fax Code	1001-1200
Receptacle Style	Straight	UL Listed	Approved
Insulation Support	Insulation Support	RU (UL Component Program)	No
Wire Type	Regular Wire	CSA Certified	Approved
Wire Range	22-18	Packaging	Strip Form
Insulation Dia.	.090-.130	Stock Thick.	.016
Insertion Force	Normal	Dim. L	.755
Material	Brass	Dim. T	.090
Finish	Tin		
Line	Premier		
Crimp Type	"F"		
Specials	None		

P/N List	Comment
	

Line art represents typical product only

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601

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SCREEN TYPE	FEA. 1	FEA. 2	FEA. 3	FEA. 4	FEA. 5	FEA. 6	FEA. 7	FEA. 8	FEA. 15
F	1600	50	38	32	31	34	40	41	42
P	1600	1001	1002	1003	1004	101	7	43	49
F	1200	32	30	4	7	14	100		

FIG. 11

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FEATURE SCREEN	GROUPING SEQUENCE	SELECTION TYPE	FEATURE
1575	1	R	57
1575	2	R	58
1575	3	L	69

FIG. 13

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SCREEN	FEATURE	ALTERNATIVE SEQUENCE	ALTERNATIVE
1101	100	1	11
1101	100	2	7
1101	11	1	1
1101	11	2	2
1101	11	3	3

FIG. 14

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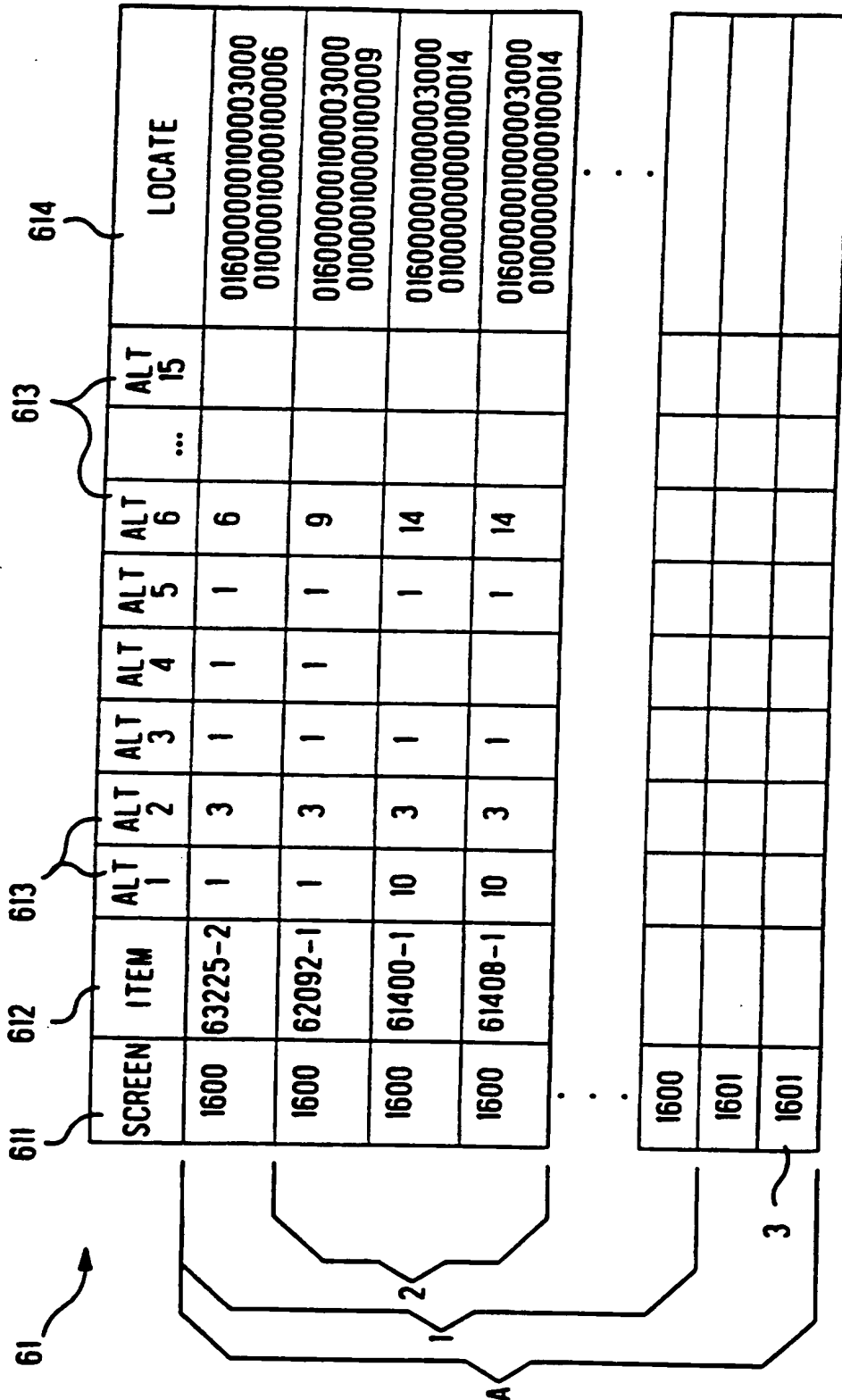


FIG. 12

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641 FEATURE	642 NAME
1	Material
2	Number of Positions
43	Stock Thickness
50	Tab Fit
57	Barrel Type
68	Wire Gauge
100	Color
1002	UL Listed

← 64

FIG. 15

691 SCREEN TYPE	692 SCREEN	693 TITLE
Menu	100	FASTON Terminals
Feature	1005	FASTON Tabs
Feature	1575	FASTON Receptacles

← 69

FIG. 20

SUBSTITUTE SHEET (RULE 26)

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651 652 653 65

FEATURE	ALTERNATIVE	NAME
57	1	Open Barrel
57	3	Closed Barrel (PIDG)
68	18	18 AWG
100	1	Red
100	2	Blue
100	3	Green
100	4	Black
50	1	.312 x .032
50	2	.250 x .032
50	10	.110 x .020
50	11	.110 x .016
43	1	.010
43	2	.012
43	6	.016

FIG. 16

661 662 66

SCREEN	IMAGE FILE NAME
1101	POSLOK
1151	FASTIN
1200	AMPIP

FIG. 17

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SCREEN	ITEM	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8	...	ALT 15
1600	63225-2	1						6			
1600	62092-1	1						6			
1600	61400-1	25	1	2	1	3		1	315		
1600	61408-1	25	1	2	1	3		1	315		

FIG. 18

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ITEM	COMMENT	IMAGE
62813-2	Left handed flag	FAST_11D
62814-1	Right handed flag	FAST_11D
61202-1	UL Listed and CSA Certified for 22 AWG	FAST_13A

FIG. 19



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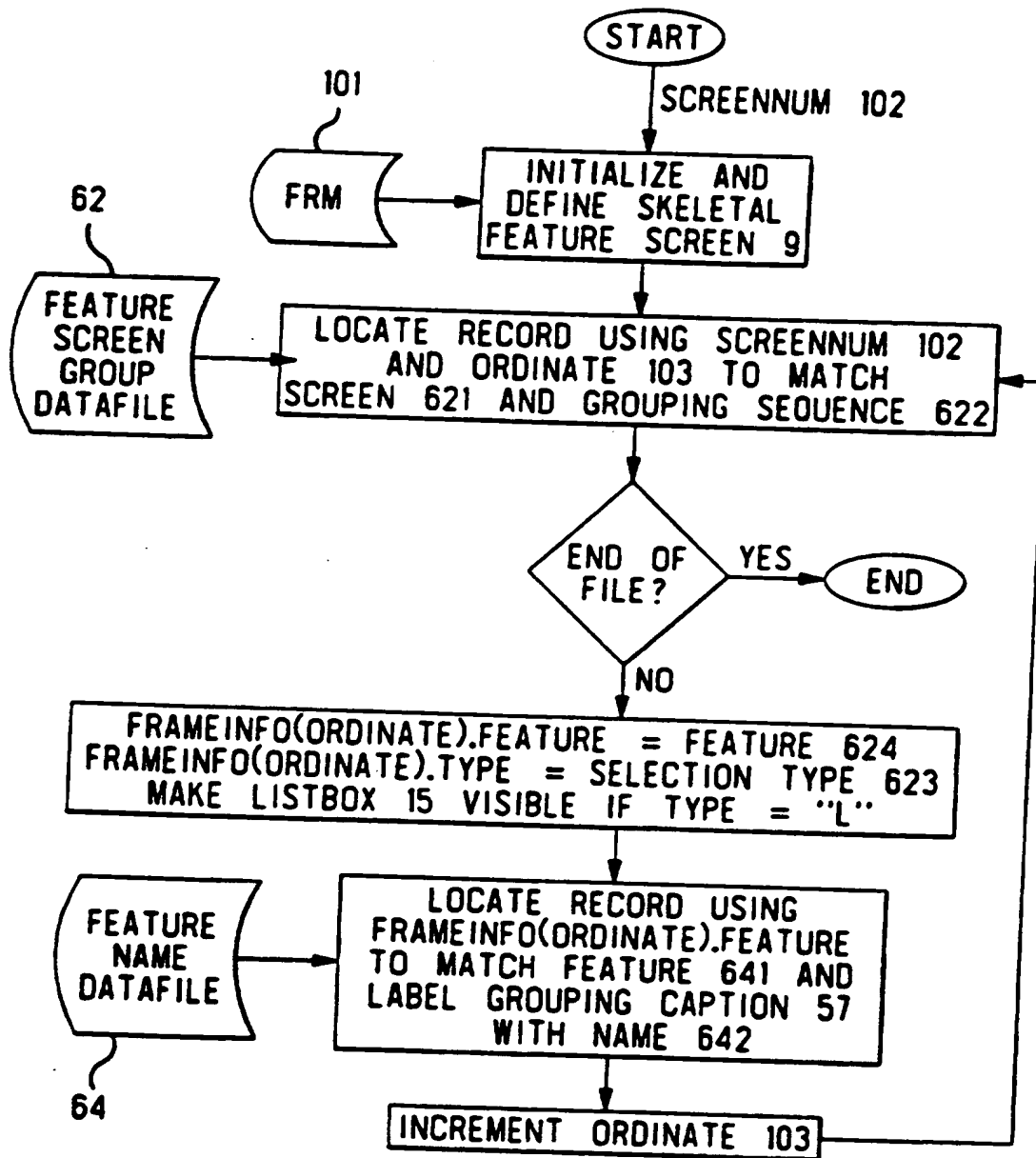
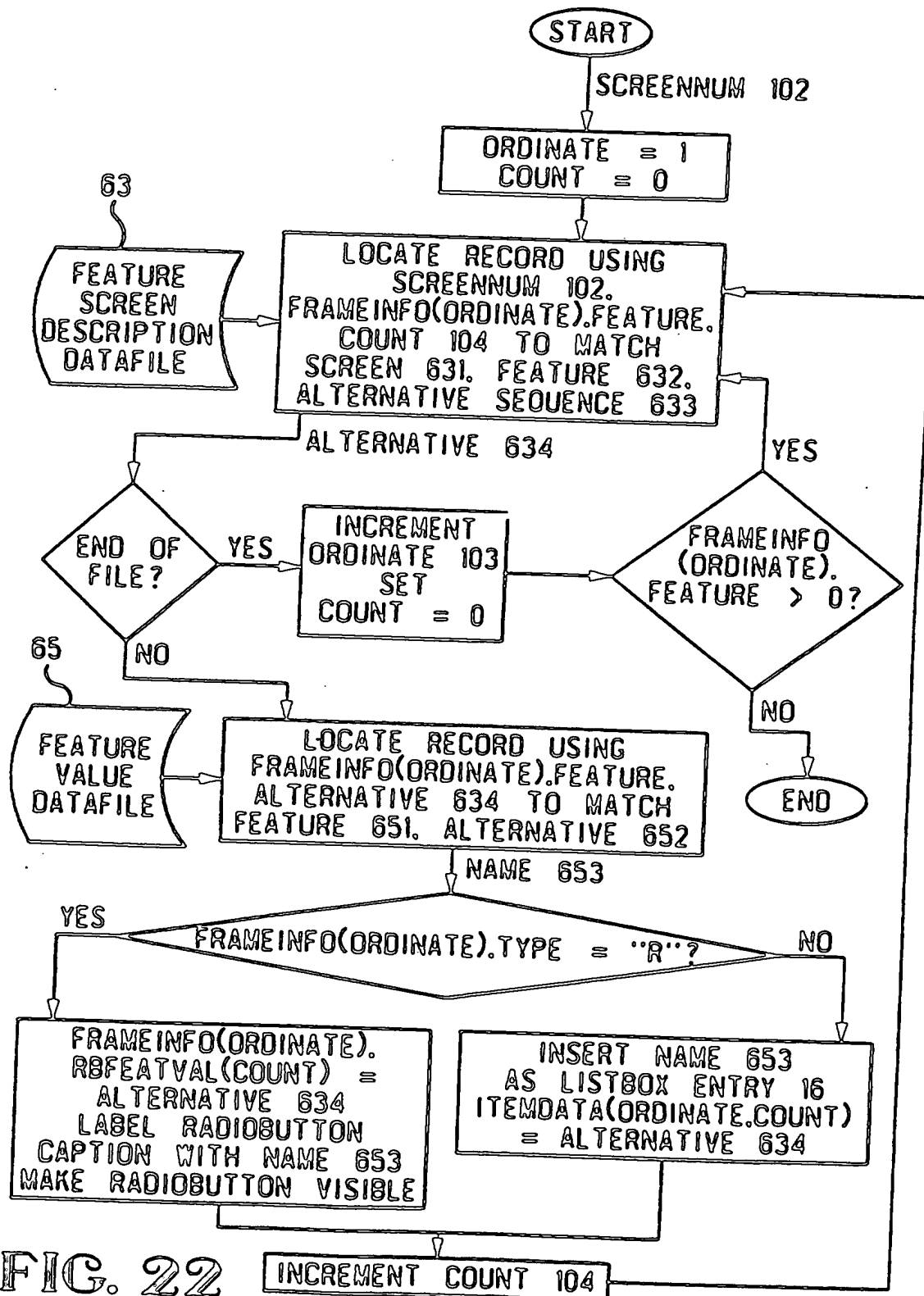


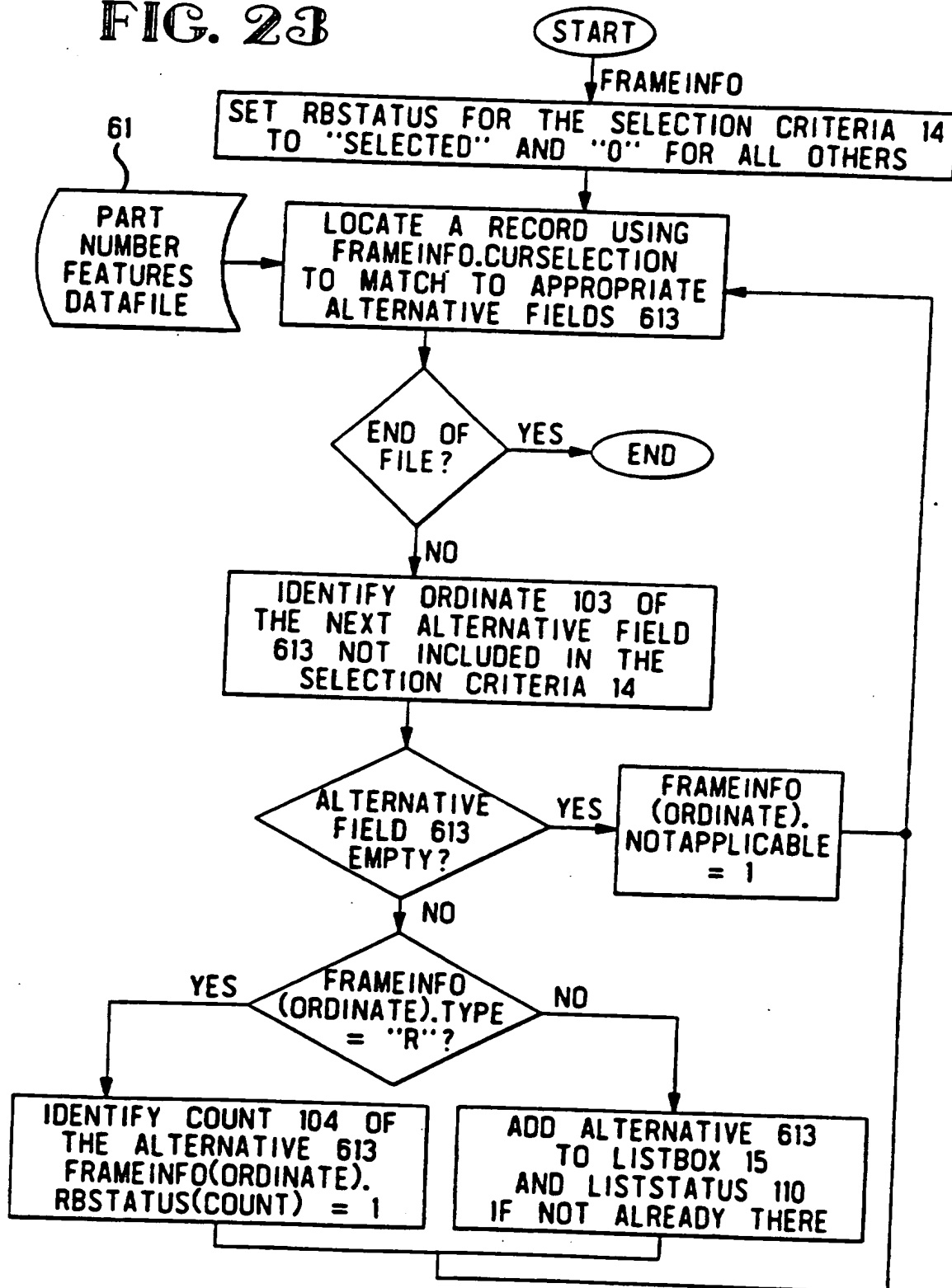
FIG. 21

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FIG. 23



SUBSTITUTE SHEET (RULE 26)

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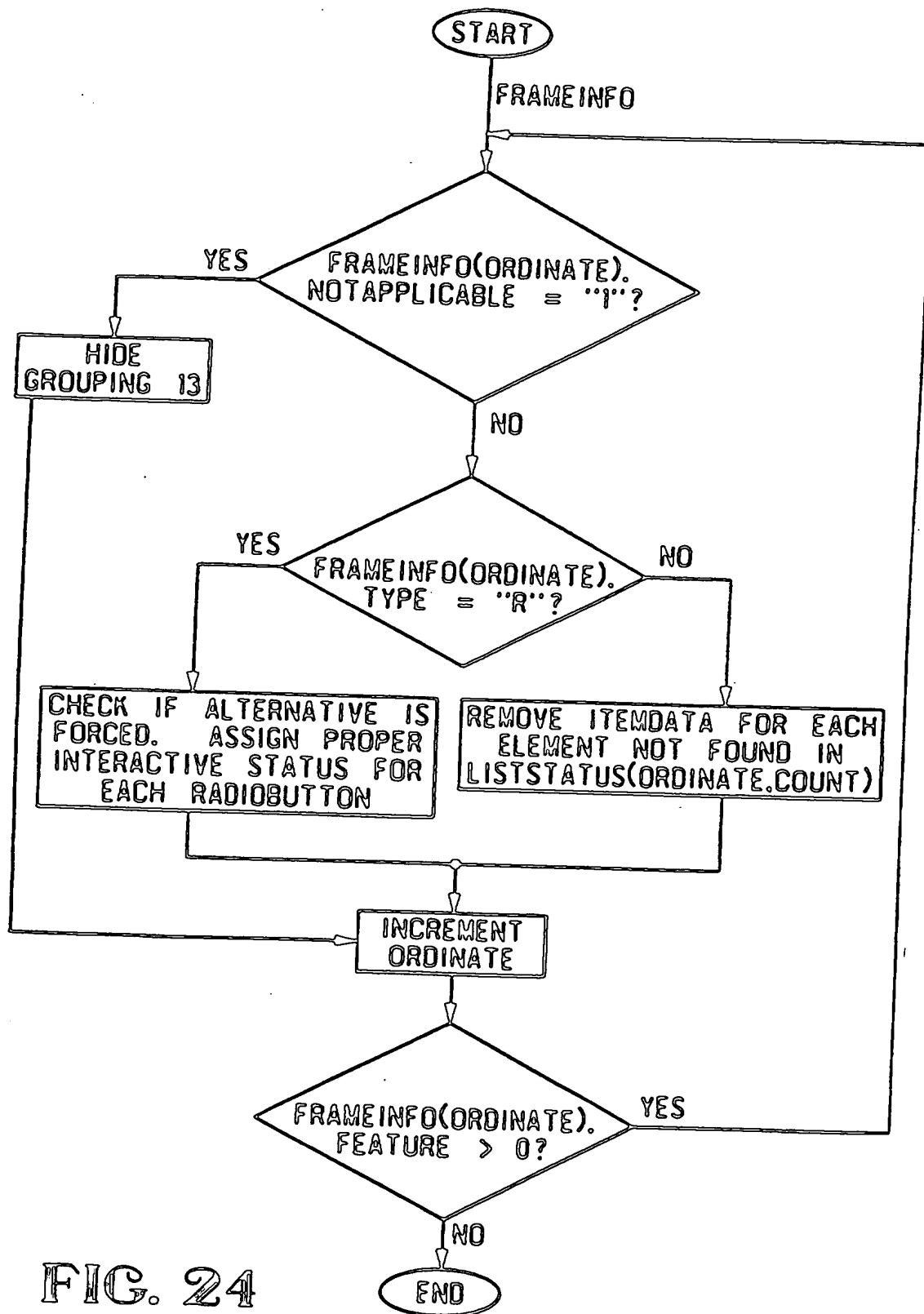


FIG. 24

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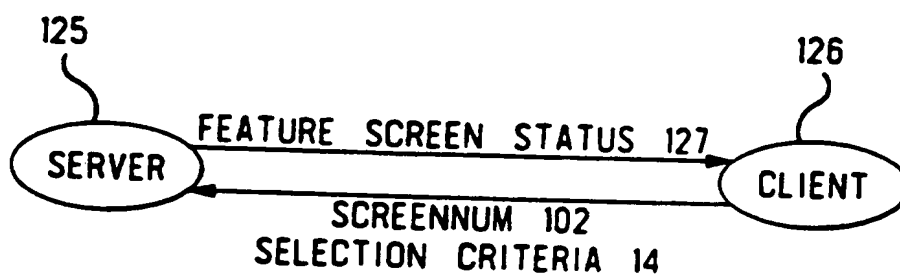


FIG. 25

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FIG. 26

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# FASTON Receptacles—Uninsulated

Go to Main Menu | New Family Picture

- ☐ **Specials:** None | For Posted Hermetic Tabs | Receptacle/Tab Combination
- ☐ **Tab Fit:** .110 x .016 | .110 x .020 | .110 x .025 | .110 x .032 | .187 x .015 | .187 x .017 | .187 x .020 | .187 x .032 | .205 x .020 | .205 x .032 | .250 x .020 | .250 x .032 | .312 x .032
- ☐ **Receptacle Style:** Straight | Flag | Reversible Flag
- ☐ **Insulation Support:** Insulation Support | Non-Insulation Support
- ☐ **Wire Type:** Regular Wire | Magnet Wire
- ☐ **Wire Range:** 12-10 | 12-10/(2)12/(2)14 | 12-10/(2)14 | 14-10 | 14-10/(2)14 | 16-12 | 16-12/(2)18 | 18-12 | 18-14 | 18-14/(2)16 | 18-14/(2)17 | 18-16 | 18-16/(2)18 | 20-14 | 20-16 | 20-16/(2)20 | 20-16/(2)20/23 | 20-18/(2)20 | 22-16 | 22-18 | 22-20 | 24-19 | 24-20 | 24-22 | 26-22
- ☐ **Insertion Force:** Normal | Low
- ☐ **Material:** Brass | Phosphor-Bronze | Steel
- ☐ **Finish:** None | Tin | Pre Tin | Silver | Nickel
- ☐ **Crimp Type:** "F" | Tab-Lok

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**FASTON Receptacles—Uninsulated** <sup>206</sup> <sup>207</sup>

Go to Main Menu | View Family Pictures | Reset Selections | View Details

Number of Matching P/Ns: 34 — 47

---

☐ **Specials:** None | For Posted Hermetic Tabs | Receptacle/Tab Combination

☐ **Tab P/N:** .110 x .016 | .110 x .020 | .110 x .025 | .110 x .032 | .187 x .015 | .187 x .017 | .187 x .020 | .187 x .032 | .205 x .020 | .205 x .032 | .250 x .020 | .250 x .032 | .312 x .032

☐ **Receptacle Style:** Straight | Flag | Reversible Flag <sup>37</sup>

☐ **Insulation Support:** Insulation Support | Non-Insulation Support

☐ **Wire Type:** Regular Wire | Magnet Wire <sup>34</sup>

☐ **Wire Range:** 12-10 | 12-10/(2)12 | 12-10/(2)14 | 14-10 | 14-10/(2)14 | 16-12 | 16-12/(2)18 | 18-12 | 18-14 | 18-14/(2)16 | 18-14/(2)17 | 18-16 | 18-16/(2)18 | 20-14 | 20-16 | 20-16/(2)20 | 20-16/(2)20/23 | 20-18/(2)20 | 22-16 | 22-18 | 22-20 | 24-19 | 24-20 | 24-22 | 26-22

☐ **Insertion Force:** Normal | Low

☐ **Material:** Brass | Phosphor-Bronze | Steel

☐ **Finish:** None | Tin | Pre Tin | Silver | Nickel <sup>8</sup>

☐ **Crimp Type:** F | Tab-Lok <sup>7</sup>

FIG. 27

SUBSTITUTE SHEET (RULE 26)

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FIG. 28

# FASTON Receptacles—Uninsulated

[Go to Main Menu](#) | [View Family Picture](#) | [Reset Selections](#) | [View Details](#)  
 Number of Matching P/Ns: 13

- ☐ **Specials:** None | For Posted Hermetic Tabs | Receptacle/Tab Combination
- ☐ **Tab Pk:** .110 x .016 | .110 x .020 | .110 x .025 | .110 x .032 | .187 x .015 | .187 x .017 | .187 x .020 | .187 x .032 | .205 x .020 | .205 x .032 | .250 x .020 | .250 x .032 | .312 x .032
- ☐ **Receptacle Style:** Straight | Flag | Reversible Flag
- ☐ **Insulation Support:** Insulation Support | Non-Insulation Support
- ☐ **Wire Type:** Regular Wire | Magnet Wire
- ☐ **Wire Range:** 12-10 | 12-10/(2)12 | 12-10/(2)14 | 12-10/(2)14 | 14-10 | 14-10/(2)14 | 16-12 | 16-12/(2)18 | 18-12 | 18-14 | 18-14/(2)16 | 18-14/(2)17 | 18-16 | 18-16/(2)18 | 20-14 | 20-16 | 20-16/(2)20 | 20-16/(2)20/23 | 20-18/(2)20 | 22-16 | 22-18 | 22-20 | 24-19 | 24-20 | 24-22 | 26-22
- ☐ **Insertion Force:** Normal | Low
- ☐ **Material:** Brass | Phosphor-Bronze | Steel
- ☐ **Finish:** None | Tin | Pre Tin | Silver | Nickel
- ☐ **Lead:** Premier | Budget | Economy | Commercial | Moldable
- ☐ **Crimp Type:** F | Tab-Lok



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# FASTON Receptacles—Uninsulated

[Go to Main Menu](#) | [View Family Picture](#) | [Reset Selections](#) | [View Details](#)  
[Matching P/N\(s\): 42845-1-46](#)

- ☐ **Specials:** None | For Posted Hermetic Tabs | Receptacle/Tab Combination
- ☐ **Tab Pkt:** .110 x .016 | .110 x .020 | .110 x .025 | .110 x .032 | .187 x .015 | .187 x .017 | .187 x .020 | .187 x .032 | .205 x .020 | .205 x .032 | .250 x .020 | .250 x .032 | .312 x .032
- ☐ **Receptacle Style:** Straight | Flag | Reversible Flag
- ☐ **Insulation Support:** Insulation Support | Non-Insulation Support
- ☐ **Wire Type:** Regular Wire | Magnet Wire
- ☐ **Wire Range:** 12-10 | 12-10/(2)12/(2)14 | 12-10/(2)14 | 14-10 | 14-10/(2)14 | 16-12 | 16-12/(2)18 | 18-12 | 18-14 | 18-14/(2)16 | 18-14/(2)17 | 18-16 | 18-16/(2)18 | 20-14 | 20-16 | 20-16/(2)20 | 20-16/(2)20/23 | 20-18/(2)20 | 22-16 | 22-18 | 22-20 | 24-19 | 24-20 | 24-22 | 26-22
- ☐ **Insertion Force:** Normal | Low
- ☐ **Material:** Brazed | Phosphor-Bronze | Steel
- ☐ **Finish:** None | Tin | Pre Tin | Silver | Nickel
- ☐ **Lead:** Premier | Budget | Economy | Commercial | Moldable
- ☐ **Crimp Type:** 'F' | Tab-Lok

FIG. 29

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FIG. 30

## FASTON Receptacles-Uninsulated

Go to Main Menu 202 / Go to Search Screen Next P/N 212

1 of 2-P/N: 41772

### Features and Properties

**32**

**Species**

Tab Fit .250 X .032

Receptacle Style Straight

Insulation Support Insulation Support

Wire Type Regular Wire

Wire Range 22-18

Insulation Dia. .090-.130

Insulation Force Normal

Material Brass

Finish Tin

Use Premier

Crimp Type TF

**34**

**Form Code** 1001-1200

**UL Listed** Approved

**IRU (UL Component Program) No** Approved

**ICSA Certified** Approved

**Packaging** Strip Form

**Stock Thick.** .016

**Dim. L** .755

**Dim. T** .090


### Line Art


29


Line art represents typical product only.

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**ANIP** Electronic Catalog -- Main Menu

 Alphabetical Search

 Picture Search

 View Part Number Details

*Note: This option requires form support.*

FIG. 31

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 <b>Electronic Catalog -- Alphabetical</b>	
Index	
<u>Return to Main Menu</u>	
<u>A/B/C/D/E/F/G/H/I/J/K/L/M/N/P/R/S/T/U/V</u>	
<u>.062 Commercial Pin and Socket Rectangular Connectors</u>	
<u>.093 Commercial Pin and Socket Rectangular Connectors</u>	
<b>A</b>	
<u>Alternator Eyelet Terminal</u>	
<u>AMPI Housing for FASTON Receptacles</u>	
<u>AMPL-BOND Ring and Spade Tongue Terminals</u>	
<u>AMPLVAR Receptacles for Tabs, Magnet Wire</u>	
<u>AMPLVAR Ring Tongue Terminals, Magnet Wire</u>	
<u>AMPLVAR Splices, Magnet Wire</u>	
<u>AMPLVAR Tabs, Magnet Wire</u>	
<b>B</b>	
<u>Budget Line FASTON Terminals</u>	

FIG. 32

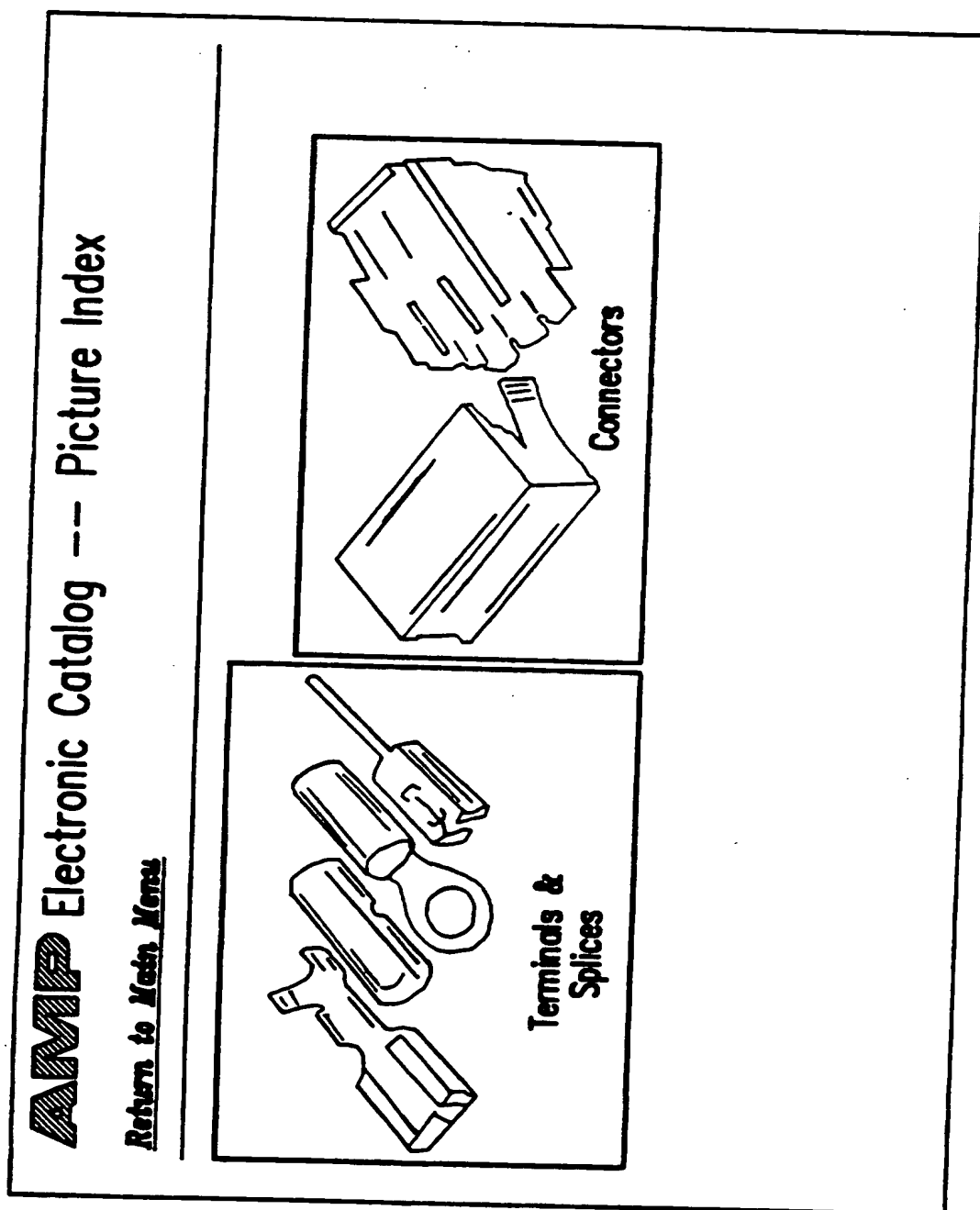


FIG. 33

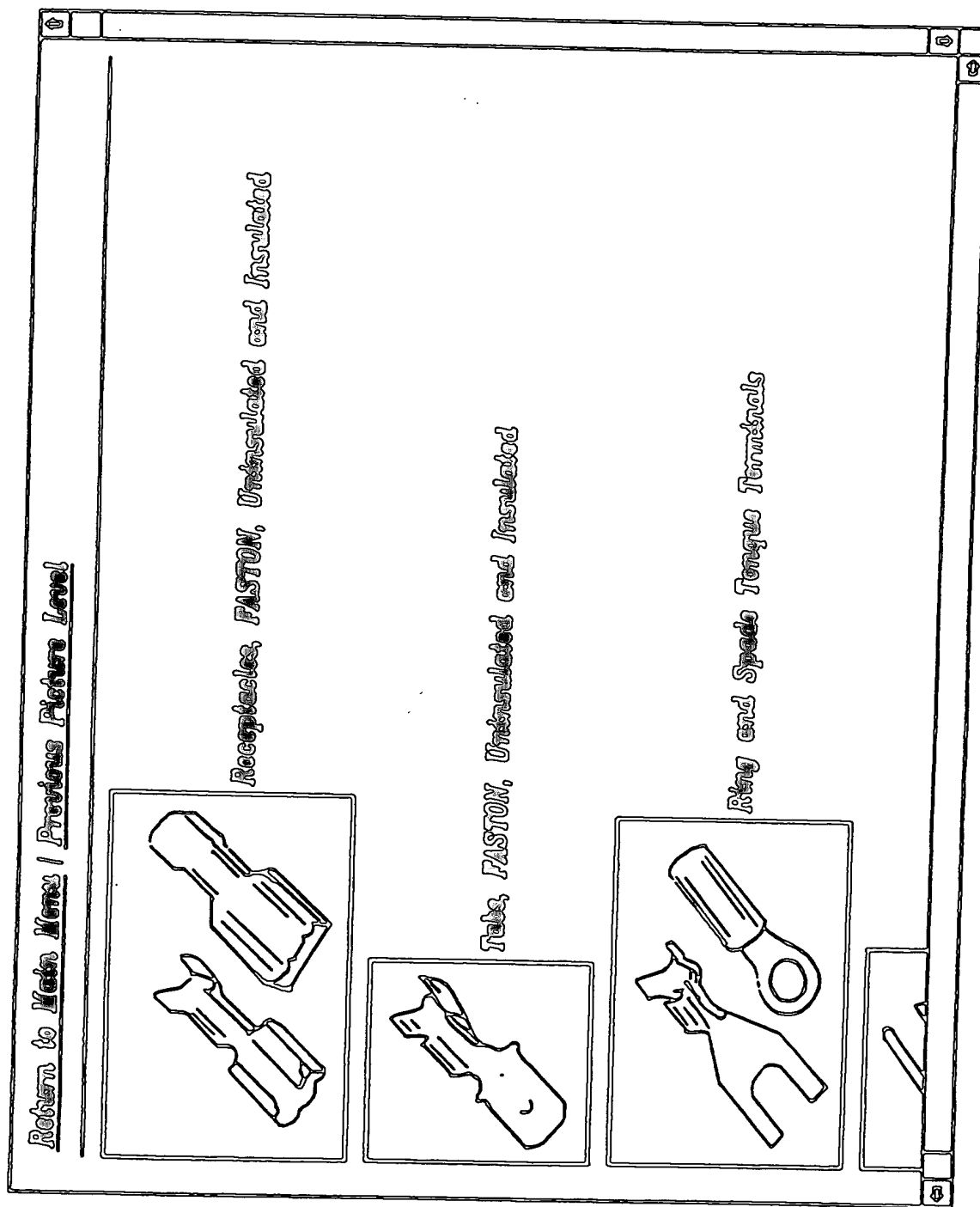


FIG. 34

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**AMP** Electronic Catalog --- View Part  
Number

[Return to Main Menu](#)

*In the current version you must enter an existing AMP Part Number! Future versions will be enhanced to automatically locate dash numbers from a "base only" part number.*

[View Detailed Information About a P/N](#)

Enter AMP Part Number:

Press this button when complete:

FIG. 35

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/13466

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 17/30

US CL : 395/600

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/600; 364/401

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, IEEE PUBLICATIONS ONDISC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,905,094 (POCOCK ET AL) 27 FEBRUARY 1990, col.4-7	1-30
A	US, A, 4,792,849 (MCCALLEY ET AL) 20 DECEMBER 1988, see entire document.	



Further documents are listed in the continuation of Box C.



See patent family member.

<sup>a</sup> Special categories of cited documents:	<sup>T</sup> Documents published after the international filing date or priority date and not in conflict with the application but cited to inform the public of the state of the art.
<sup>A</sup> Documents defining the general state of the art which is not considered to be part of particular relevance	<sup>X</sup> Documents of particular relevance; the cited invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.
<sup>E</sup> Earlier documents published on or after the international filing date	<sup>Y</sup> Documents of particular relevance; the cited invention cannot be considered to involve an inventive step when the document is considered with one or more other such documents, each contribution being distinct from a person skilled in the art.
<sup>L</sup> Documents which may throw doubt on priority claim(s) or which is cited to establish the publication date of another document or other special reason (to be specified)	<sup>Δ</sup> Documents of the same patent family.
<sup>O</sup> Documents referring to an oral disclosure, use, exhibition or other means	
<sup>P</sup> Documents published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

23 JANUARY 1996

Date of mailing of the international search report

14 MAR 1996

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Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

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